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TESLA-SCHERFF PAPERS

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"My ladies fear not,
By all the laws of war you're privileged."

Henry VIII, Act 1, Scene 2.

The Players.

16 Bramercy Park.

The Players request the honor of your company on
the afternoon of Monday, April the twenty third,
from two until six o'clock.

M

with compliments of Mr. Nikola Tesla

1900.

*This card will admit one lady only
and must be signed by a member of the Club.*

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Nikola Tesla,
New York, 1900
Invitation card of the Players Club,
signed by Tesla

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Nikola Tesla, Eng.,

New York City.

May 10th, 1913.

Dear Mr. Tesla:-

I beg to acknowledge receipt of your letter of yesterday together with tax report of the Nikola Tesla Company for the year 1912, which I at once turned with the Collector of Internal Revenue.

As regards your note for \$500.00, which I have not yet seen, I have tried to have the same extended by the present but my efforts have met with opposition. If you could send me a check of two hundred dollars on account, I believe I could persuade the parties concerned to do so. Kindly let me know your decision in the matter at once so that the note may not go to protest.

Respectfully yours,

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(Tesla, Nikola)
n.p., 10 May 1913
To Nikola Tesla
t.l., 1 p. (Carbon copy of a letter
Tesla's lawyer(?))

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21380E

PROSPECTUS FOR MR. TESLA'S NITRATES COMPANY.

~~Mr. Nikola Tesla, whose~~ *discoveries*
~~have formed the basis of so many~~ *recent*
~~more recent practical applications of electricity, and which by~~
~~their world-wide recognition have given this inventor a pre-eminent~~
~~position in the field of electricity, has, by a series of discover-~~
~~ies extending over many years, and all protected by valid patents~~
~~in all the great countries of the world, introduced a system for~~
~~the fixation of atmospheric nitrogen, ^{that is, its chemical combination with}~~
~~the oxygen of the ^{air} atmosphere into~~
~~a first-class product of its own, ^{which, by its}~~
~~tremendous value and wide-reaching influence, bids fair to outrank~~
~~many times his wonderful invention of the alternating current motor.~~

has evolved
a new and
efficient
process for

~~First, that his high-frequency electric discharges in~~
~~the atmosphere give in a much more effective degree a peculiar~~
~~electric chemical stress, which brings about this most difficult~~
~~of combinations; a stress which all workers in this field have~~
~~recognised for years as being one which not only must be of~~
~~tremendous power, but of almost infinite suddenness. The time~~
~~element which has so materially interfered with the success of~~
~~other workers in this field, has, by Mr. Tesla's invention, been~~
~~almost entirely removed as an objection.~~

~~Second, Mr. Tesla's peculiar means of obtaining phenom-~~
~~enally high voltages (running into the millions of volts) from~~
~~apparatus of most moderate dimensions enables him to obtain the~~

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Tesla, Nikola
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part ^{of the plant} ~~of the plant~~ subject to rapid ^{deterioration} ~~destruction~~; in fact, most of it is ^{good for one hundred years} ~~good for one hundred years~~ consists principally of brick ^{and metal and is good for centuries} ~~buildings, transmitters, brick or tile communication chambers and equipping powers or their equivalent~~. The process is a continuous one and once started requires no manual labor, ^{electricity} ~~the electricity~~ continuing to burn the atmosphere into nitric fumes, which in turn combine with water to make nitric acid, and this goes on until the ~~current~~ ^{current} is switched off, and immediately recommences when the ~~current~~ ^{current} is ~~again~~ ^{switched} on. There is no loss upon the discontinuing of the process for an hour, a day, a month or a year, ^{other than} ~~except~~ that ~~is~~ ^{the} due to plant lying idle and carrying ^{the small} ~~its~~ ^{charge} of interest. It is obvious, therefore, that it ^{is only necessary to obtain power at a sufficiently} ~~can be built up~~ ^{reasonable} ~~to make an almost unlimited industry~~ ^{possible by the use of this revolutionary process a very} ~~can be built up~~ ^{reasonable} ~~with a very reasonable investment of capital yielding~~ ^{annually a return many times the first cost.}

The Tesla Nitrates Company owns the exclusive rights under the United States patents granted to ~~the~~ ^{and} Tesla, applicable to the manufacture of nitrates from the atmosphere, ^{which are the following:} ~~which are the following:~~ ^{relative} ~~to this subject, and will get the benefit of his assistance and advice.~~ ^{It is proposed to immediately make a demonstration of the} ~~on the commercial magnitude in the immediate vicinity of New York~~ ^{City, where experts and investors may see for themselves the} ~~practical application of these inventions, in a full sized unit~~ ^{apparatus. In making this test, Mr. Tesla will have at his} ~~disposal, a plant that has already cost over \$200,000, a large~~ ^{part of which will be immediately available.} ~~It is estimated that~~ ^{this test will involve an expenditure of \$25,000} ~~for the test~~ ^{will be ample to meet}

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ishing of the additional apparatus, partly for attendance and
 all expenses in the connection, and certainly the plant will serve
 operation and partly for the very full and extended demonstra-
 tion which it is proposed to be made.
 prior to their application on the large scale contemplated.

XXXX Off Tesla is now devoting himself to
 the perfection of plans for ~~scale~~ a large ^{installation} plant
 being erected in the west by a ~~new business~~
 of international repute
 practical engineers, who ~~has been for a long time~~
~~has been~~
 a long experience in the fixation of nitrogen
 by the old method and is thoroughly familiar
 with all ~~the~~ facts pertaining to the manufacture
 and sale of the products. In the near
 future X K

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the subject you wish to write
about. In order to explain this
phenomenon Einstein has
invented the quantum "hamster"

My theory of gravitation
explains this phenomenon
perfectly

N. T. April 15, 1932

We need a great deal about the
cosmic rays matter being
changed into force and force
being changed into matter
by the cosmic rays. This is
absurd. It is the same as
saying that the body can be
changed into the mind, and the
mind into the body. We know
that the mind is a functioning
of the body, and we know the same
manner force is a function of
matter. Without a body there
can be no mind, without matter
there can be no force.

Einstein has for years developed
formulas explaining the mechanism
of the cosmos. In doing this he
overlooked an important factor,
namely the fact, namely that some
of the heavenly bodies are necessary
in distance from the sun. This
is the same as writing for a
business letter and forgetting

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Tesla, Nikola
n.p., 15 Apr 1932
a.ms.s. (with initials), 2 p. (Statement of
Tesla relating to force and matter, to
Einstein's theories, and Tesla's own
theory of gravitation)

DICKSON D. ALLEY,

FORMERLY OF TURNER & CO.

ART PHOTOGRAPHER.

12 EAST 15TH STREET, NEAR 5TH AVENUE.

35

Paintings, &c., copied by the Isochromatic Process.

New York May 26 1903

Dear Mr. Alley,

Sorry I missed you. I want you to take two snaps at my place from the railroad track so that the chimney of the building is just in the center of frame. From a previous photograph taken by one of my assistants it would seem that the best view would be obtained by placing the camera not quite on the end of the central path from ^{railroad} track to building but considerably closer to latter. The camera is, my opinion, should also be elevated considerably above ground, but this may not be necessary. Please when taking this principal view see that the doors of the building are wide open and the door of the tool room is wide closed and that the building in front of tool room appear symmetrical with respect to door. Also observe that all the windows are down and that the workmen

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Tesla, Nikola
New York, 26 May 1903
To Dickson D. Alley
a.l.s., 2 p.

The art of the camera. Have any other
 irregularities you may notice removed. Then
 they be seen objects on the left side near
 the bottom if so they should be taken away
 You will find out the help necessary. What
 I want is a clear unobstructed view of
 the subject of the animal picture.
 I suppose taking two exposures.

Beardsley I want a whole new form
on which you may insert a circular so
as to secure a few visitors as to
between the two. I have given
about this to Mr. Schmitt. Two sugar
this may be taken.

In addition I would like to take a
view of the tower above. This may
be done from behind by placing the
camera just in front of the smaller
house. Of this one view will be enough.

You will probably have some plates. Expl
and in this case two views of the
laboratory may be taken - I mean views
of that part which is nearest to the lower

About this Mr. Tschupp knows also. You can
go to Lumb to my place or his and if you should
find it necessary stay over night. Please let me hear from you.

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Tesla, Nikola
New York, 26 May 1903
To Dickson D. Alley
a.l.s., 2 p.



Apr 1936

At the close of 1889, having worked one year in the shops of George Westinghouse, Pittsburgh, I experienced so great a longing for resuming my interrupted investigations that, notwithstanding a very tempting proposition by him, I left for New York to take up my laboratory work. But owing to pressing demands by several foreign scientific societies I made a trip to Europe where I lectured before the Institution of Electrical Engineers and Royal Institution in London and the Societe de Physique in Paris. After this and a brief visit to my home in Yugoslavia I returned to this country in 1892 eager to devote myself to the subject of preoccupation of my thoughts: the study of the universe.

During the succeeding two years of intense concentration I was fortunate enough to make two far-reaching discoveries. The first was a dynamic theory of gravity, which I have worked out in all details and hope to give to the world very soon. It explains the causes of this force and the motions of heavenly bodies under its influence so satisfactorily that it will put an end to idle speculations and false conceptions, as that of curved space. According to the relativists, space has a tendency to curvature owing to an inherent property or presence of celestial bodies. Granting a semblance of reality to this fantastic idea, it is still self-contradictory. Every action is accompanied by an equivalent reaction and the effects of the latter are directly opposite to those of the former.

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mainly on his various discoveries)

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Supposing that the bodies act upon the surrounding space causing curvatures of the same, it appears to my simple mind that the curved spaces must react on the bodies and, producing the opposite effects, straighten out the curves. Since action and reaction are co-existent, it follows that the supposed curvature of space is entirely impossible. But even if it existed it would not explain the motions of the bodies as observed. Only the existence of a field of force can account for them and its assumption dispenses with space curvature. All literature on this subject is futile and destined to oblivion. So are also all attempts to explain the workings of the universe without recognizing the existence of the ether and the indispensable function it plays in the phenomena.

My second discovery was a physical truth of the greatest importance. As I have searched the scientific records in more than a half dozen languages for a long time without finding the least anticipation, I consider myself the original discoverer of this truth, which can be expressed by the statement: There is no energy in matter other than that received from the environment. On my 79th birthday I made a brief reference to it, but its meaning and significance have become clearer to me since then. It applies rigorously to molecules and atoms as well as to the largest heavenly bodies, and to all matter in the universe in any phase of its existence from its very formation to its ultimate disintegration.

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Being perfectly satisfied that all energy in matter is drawn from the environment, it was quite natural that when radioactivity was discovered, in 1896 I immediately started a search for the external agent which caused it. The existence of radioactivity was positive proof of the existence of external rays. I had previously investigated various terrestrial disturbances affecting wireless circuits but none of them or any others emanating from the earth could produce a steady sustained action and I was driven to the conclusion that the activating rays were of cosmic origin. This fact I announced in my papers on Roentgen rays and Radiations contributed to the Electrical Review of New York, in 1897. However, as radioactivity was observed equally well in other widely separated parts of the world, it was obvious that the rays must be impinging on the earth from all directions. Now, of all bodies in the Cosmos, our sun was most likely to furnish a clue as to their origin and character. Before the electron theory was advanced, I had established that radioactive rays consisted of particles of primary matter not further decomposable, and the first question to answer was whether the sun is charged to a sufficiently high potential to project such particles and produce the effects noted. This called for a prolonged investigation which culminated in my finding that the sun's potential was 216 billions of volts and that all such large and hot heavenly bodies emit cosmic rays. Through

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Further solar research and observation of Novae this has been proved conclusively, and to deny it would be like denying the light and heat of the suns. Nevertheless, there are still some doubters who prefer to shroud the cosmic rays in deep mystery. One of them declared recently that they must come from very remote regions in which matter is converted into energy. I am sure that this is not true for there is no place where such a process occurs in this or any other universe beyond our ken.

A few words will be sufficient in support of this contention. The kinetic and potential energy of a body is the result of motion and determined by the product of its mass and the square of velocity. Let the mass be reduced, the energy is diminished in the same proportion. If it be reduced to zero the energy is likewise zero for any finite velocity. In other words, it is absolutely impossible to convert mass into energy. It would be different if there were forces in nature capable of imparting to a mass infinite velocity. Then the product of zero mass with the square of infinite velocity would represent infinite energy. But we know that there are no such forces and the idea that mass is convertible into energy is rank nonsense.

While the origin and character of the rays observed near the earth's surface are sufficiently well ascertained, the so-called cosmic rays observed at great altitudes presented

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a riddle for more than 26 years, chiefly because it was found that they increased with altitude at a rapid rate. My investigations have brought out the astonishing fact that the effects at high altitudes are of an entirely different nature, having no relation whatever to cosmic rays. These are particles of matter projected from celestial bodies at very high temperature and charged to enormous electric potentials. The effects at great elevations, on the other hand, are due to waves of extremely small lengths produced by the sun in a certain region of the atmosphere. This is the discovery which I wish to make known. The process involved in the generation of the waves is the following: The sun projects charged particles constituting an electric current which passes through a conducting stratum of the atmosphere approximately 10 kilometers thick enveloping the earth. That is a transmission of energy exactly as I illustrated in my experimental lectures in which one end of a wire is connected to an electric generator of high potential, its other end being free. In this case the generator is represented by the sun and the wire by the conducting air. The passage of the solar current involves the transference of electric charges from particle to particle with the speed of light, this resulting in the production of extremely short and

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penetrating waves. As the air stratum mentioned is the source of the waves it follows that the so-called cosmic rays observed at great altitudes must increase as this stratum is approached. My researches and calculations have brought to light the following facts in this connection: (1) the intensity of the so-called cosmic rays must be greatest in the zenithal portion of the atmosphere; (2) the intensity should increase more and more rapidly up to an elevation of about 20 kilometers where the conducting air stratum begins; (3) from there on the intensity should fall, first slowly and then more rapidly, to an insignificant value at an altitude of about 30 kilometers; (4) the display of high potential must occur on the free end of the terrestrial wire, that is to say, on the side turned away from the sun. The current from the latter is supplied at a pressure of about 216 billion volts and there is a difference of 2 billion volts between the illuminated and the dark side of the globe. The energy of this current is so great that it readily accounts for the aurora and other phenomena observed in the atmosphere and at the earth's surface.

For the time being I must content myself with the announcement of the salient facts, but in due course I expect to be able to give more or less accurate technical

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data relating to all particulars of this discovery.

To go to another subject, I have devoted much of my time during the year past to the perfecting of a new small and compact apparatus by which energy in considerable amounts can now be flashed through interstellar space to any distance without the slightest dispersion. I had in mind to confer with my friend George E. Hale, the great astronomer and solar expert, regarding the possible use of this invention in connection with his own researches. In the meantime, however, I am expecting to put before the Institute of France an accurate description of the devices with data and calculations and claim the Pierre Curie Prize of 100,000 francs for means of communication with other worlds, feeling perfectly sure that it will be awarded to me. The money, of course, is a trifling consideration, but for the great historical honor of being the first to achieve this miracle I would be almost willing to give my life.

My most important invention from a practical point of view is a new form of tube with apparatus for its operation. In 1886 I brought out a high potential targetless tube which I operated successfully with potentials up to 4 million volts from '86 to '93. This device was adopted by many imitators

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and with slight modifications it is employed even now in all research laboratories and scientific institutions here and in other countries, and virtually all atomic investigations are carried on with it. At a later period I managed to produce very much higher potentials up to 18 million volts, and then I encountered unsurmountable difficulties which convinced me that it was necessary to invent an entirely different form of tube in order to carry out successfully certain ideas I had conceived. This task I found far more difficult than I had expected, not so much in the construction as in the operation of the tube. For many years I was baffled in my efforts, although I made a steady slow progress. Finally though, I was rewarded with complete success and I produced a tube which it will be hard to improve further. It is of ideal simplicity, not subject to wear and can be operated at any potential, however high, that can be produced. It will carry heavy currents, transform any amount of energy within practical limits, and it permits easy control and regulation of the same. I expect that this invention, when it becomes known, will be universally adopted in preference to other forms of tubes, and that it will be the means of obtaining results undreamed of before. Among others, it will enable the production of cheap radium substitutes in any desired quantity and will be, in general, immensely more effective in the smashing of

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atoms and the transmutation of matter. I am hopeful that it will be possible by its use to carry out a process in which there should be no misses whatever, but only hits. However, this tube will not open up a way to utilize atomic or sub-atomic energy for power purposes. According to the physical truth I have discovered there is no available energy in atomic structures, and even if there were any, the input will always greatly exceed the output, precluding profitable, practical use of the liberated energy.

Some papers have reported that I had promised to give a full description of my tube and its accessories on the present occasion. This has caused me considerable annoyance. As, owing to some obligations I have undertaken regarding the application of the tube for important purposes, I am unable to make a complete disclosure now. But as soon as I am relieved of these obligations a technical description of the device and of all the apparatus will be given to scientific institutions.

There is one more discovery which I want to announce at this time, consisting of a new method and apparatus for the obtaining of vacua exceeding many times the highest heretofore realized. I think that as much as one-billionth of a micron can be attained. What may be accomplished by means of such vacua is a matter of conjecture, but it is obvious that they will make possible the production of much more intense

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effects in electron tubes. My ideas regarding the electron are at variance with those generally entertained. I hold that it is a relatively large body carrying a surface charge and not an elementary unit. When such an electron leaves an electrode of extremely high potential and in very high vacuum it carries an electrostatic charge many times greater than the normal. This may astonish some of those who think that the particle has the same charge in the tube and outside of it in the air. A beautiful and instructive experiment has been contrived by me showing that such is not the case, for as soon as the particle gets out into the atmosphere it becomes a blazing star owing to the escape of the excess charge. The great quantity of electricity stored on the particle is responsible for the difficulties encountered in the operation of certain tubes and the rapid deterioration of the same.

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STRICTLY CONFIDENTIAL

This device is greatly superior to the usual flat core type in efficiency and other respects. It consists of a thin polished metal tube acting as reflector and a base equipped with switch and connecting terminals and carrying spaced resistor wires concentric with the tube and at a certain distance from the inner surface of the same. In this arrangement the diffuse radiation is virtually eliminated, and the heater operates as if the resistor were not present, the rays being projected from the reflector radially to the central or focal region occupied by the boiling pot.

The principal advantages thus secured are the following:

1. A very high efficiency, as much as 96% being attainable.
2. The efficiency is practically the same whether the pot is large or small since the density of the rays is inversely as the diameter of the vessel.
3. Due to these features the current consumption is hardly more than half of that in the best heaters of the type referred to.
4. The resistor has a relatively much longer life and can be made to last almost indefinitely in some cases. Also less wire can be used if desired.
5. The heat being largely confined to the range, the kitchen remains comparatively cool.
6. Another practical advantage is greater safety from a variety of accidents frequently occurring with ordinary ranges.
7. The new heater is especially adapted for use on shipboard, Pullman cars, aerial vehicles and automobiles.
8. Likewise, it is suitable for all kinds of service on the table, being free from the objections of the present type.
9. It saves considerable time in certain applications.
10. Owing to simplicity, the cost of manufacturing is low.

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Tesla, Nikola
The New Tesla Electric Heater
n.p., n.d.
a.ms., 3 p. (possibly in Tesla's hand)
With typed copy and carbon.

213805

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THE NEW TESLA ELECTRIC HEATER.

STRICTLY CONFIDENTIAL.

This device is greatly superior to the usual flat coil type in efficiency and other respects. It consists of a thin polished metal tube acting as reflector and a base equipped with switch and connecting terminals, and carrying spaced resistor wires concentric with the tube and at a certain distance from the inner surface of the tube. In this arrangement the intense radiation is virtually eliminated, and the heater operates as if the resistor were not present, the rays being projected from the reflector radially to the central or focal region occupied by the boiling pot.

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3. Due to these features the current consumption is hardly more than half of that in the best heaters of the type referred to.
4. The resistor has a relatively much longer life and can be made to last almost indefinitely in some cases. Also less wire can be used if desired.
5. The heat being largely confined to the range, the kitchen remains comparatively cool.
6. Another practical advantage is greater safety from a variety of accidents frequently occurring with ordinary ranges.
7. The new heater is especially adapted for use on shipboard, Pullman cars, aerial vehicles and automobiles.
8. Likewise it is suitable for all kinds of service on the table, being free from the objections of the present type.
9. It saves considerable time in certain applications.
10. Owing to simplicity, the cost of manufacturing is low.

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Seventh Chapter.

What my uncle Herse said and what my ~~uncle~~ Herse was; and why Fritz Sahlmann had to whistle.

When the watchman was taken down the castle hill, Fritz Sahlmann had, of course, gone along, only in order to see how the thing would come the prisoner and if he would not perhaps escape, but the latter did not come to pass. The procession moved slowly down to the town-hall, for it had to whistle its way through all sorts of teams and wagons, which had been sent from the villages and the town for the transportation of grain and booty and were now drifting to and fro in the castle-court and on the road to the castle and surrounded by Frenchmen, that they might not again escape, for the old farmers were already devilish smart ^{at} this ~~game~~ ^{game}. - The watchman went along with his two guardians, not so much as a lamb and also perfectly calm, for though he had been greatly frightened at first and although the whole affair of last night was very disagreeable and serious for him, during the examination which the adjutant had instituted with him he had come into a frame of mind, which might be described as: "Yes, you talk or! You may say a great deal before a word of it will please me", and his answers had turned out very droll. And although he had not in him that wild courage which is lately so common for a soldier, he had already been too long in the world and been in a scrape so often, that he did not immediately despair. He let things come as

-73-

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... "I was ... to ~~the~~ ^{end} ... to
himself, ... to the door of the town-hall. -

"Fritz ...", said ~~the~~ ^{addition} ...
He ... to ... the ... Fritz ... tells with the greatest importance the story of
yesterday. ... Mr. ... sleep in ...
... and how he himself had dropped
... broken the chief-magistrate's pipe, - but he could not help it,
it was Viken's fault - and that the colonel had wanted to stop the
chief magistrate and how ... Westphalian was ... in the
kitchen, a picture of ... but about the lamp or ...
nothing.

Now my wife, ~~the~~ ^{addition} ... was in encely patriotic,
even if only in secret. ... has its reason. For as he wis-
pered to me long years afterwards, "when Bonaparte was already dead,
he used to believe ... this time to the League of Virtue. And I do
believe him, because when he was in company he would always play
with a long watch chain of very light hair - the count Berre's was
black - and he would play with a dangerously thin iron ring finger
ring, with which he had once almost beaten that ...
Huepfer, a journey to look ... to death, ... in
a very impolite ... or in the court room. - "Writer", he said to me
later, "this ... who a ... had

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her head shorn for the fatherland, and this iron ring cost me
my gold one. But do not speak of it, I do not like it." Therefore
he was at the time when this story happened, with good reason such
for secrecy. It is possible, too, that his way and manner of look-
ing over everything together from a distant point of view had led
to do with his leading towards secrecy, for a while he had had to
fear for himself and his life with the same trifling circumstances
tell, in order that the little of knowledge which he had, re-
main hanging together and would not go to pieces miserably and
ly, ~~alderman~~ *alderman* would let his own mind to the right and
Czerwikow to the left, and so on and so forth. He
did not understand his business, for he was only a man to
Berlin, but to the right or left he was on the run. In the
part's flank. In short, he was just a man at heart and he
turn a shadow into a shadow. In every respect he was a
he was a foreign tyrant, and on some fine morning at a stroke he
row could be lath and receive a few blows too, then he would car-
ry on, if the Duke of Mecklenburg had been treated to a slap in
the face.

"Hold your tongue, boy!" *alderman* ~~alderman~~ Herse whispered very
seriously, "do you want to get out your dead sentences here in the
public market place? - For the widow's life I would not give
a single roschen, because it is certain that the miller and his
Frederick have killed the ~~alderman~~ ..." - "Not the miller", Fritz

-75-

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THE NEW TESLA-ELECTRIC HEATER.

STRICTLY CONFIDENTIAL.

This device is greatly superior to the usual flat coil type in efficiency and other respects. It consists of a thin pressed metal tube acting as reflector and a base equipped with switch and connecting terminals and carrying space resistor wires concentric with the tube and at a certain distance from the inner surface of the same. In this arrangement the diffuse radiation is virtually eliminated and the heater operates as if the resistor wires were present, the rays being projected from the surface of the radiating to the central or focus region comprised by the boiling pot.

The principal advantages thus secured are the following:

1. A very high efficiency, as much as 96% being attainable.
2. The efficiency is practically the same whether the pot be large or small since the density of the rays is inversely as the length of the reflector.
3. Due to this property the current consumption

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3. Only more than half of that in the best heaters of the type referred to.

4. The resistor has a relatively much longer life and can be made to last almost indefinitely in some cases, while low wire can be used if desired.

5. The heat being largely confined to the range, the heater remains comparatively cool.

6. Another practical advantage is greater safety from a variety of accidents frequently occurring with ordinary ranges.

7. The new heater is especially adapted for use on shipboard, Pullman cars, aerial vehicles and automobiles.

8. Likewise, it is suitable for all kinds of service on the tables, being free from the objections of present heaters.

9. It saves considerable time in certain applications.

10. Owing to simplicity the cost of manufacture is low.

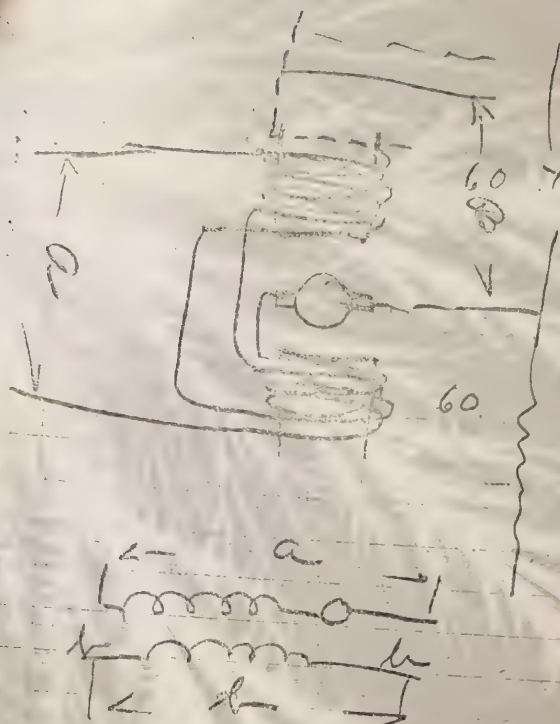
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Wind field coils with two wires - winding both at the same time. One set of field windings to be connected in series, see circuit A. and two Arzumi also brought out. The other set of field windings should be connected in series with the armature, see circuit B. at circuit to tap 1/20 ampere or 60 volts.

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New York, Apr. 19th, 1906.

Mr. Nicholas Tesla,
Waldorf Astoria, C I T Y.

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We have your favor of the 16th inst., which
confirms telephone instructions to ship to you 2500 ft.
of #8 M.S.G. rubber insulated and lead covered cable.

Please note we are giving this order best attention
in accordance with our quotation of April 16th.

Very respectfully,

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STANDARD UNDERGROUND CABLE CO.

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Standard Underground Cable Co.
New York, 19 Apr. 1906
To Nikola Tesla
t.l.s., 1p.

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MECHANICAL THERAPY

BY

NIKOLA TESLA

In order to convey a clear idea of the significance and revolutionary character of this discovery it is indispensable to make a brief statement regarding ELECTRICAL THERAPY.

Fifty years ago, while investigating high frequency currents developed by me at that time, I observed that they produced certain physiological effects offering new and great possibilities in medical treatment. My first announcement spread like fire and experiments were undertaken by a host of experts here and in other countries. Then a famous French physician, Dr. D'Arsonval, declared that he had made the same discovery, a heated controversy relative to priority was started. The French, eager to honor their countryman, made him a member of the Academy, ignoring entirely my earlier publication. Resolved to take steps for vindicating my claim, I went to Paris, where I met Dr. D'Arsonval. His personal charm disarmed me completely and I abandoned my intention, content to rest on the record. It shows that my disclosure antedated his and also that he used my apparatus in his demonstrations. The final judgment is left to posterity.

Since the beginning, the growth of the new art and industry has been phenomenal, some manufacturers turning out daily hundreds of sets. Many millions are now in use throughout the world. The currents furnished by them have proved an ideal tonic for the human nerve system. They promote heart action and digestion, induce healthful sleep, rid the skin of destructive exudations and cure colds and fever by the warmth they create. They vivify atrophied or paralyzed parts of the body, allay all kinds of suffering and save annually thousands of lives. Leaders in the profession have assured me that I have done more for humanity by this medical treatment than by all my other discoveries and inventions. Be that as it may, I feel certain that the MECHANICAL THERAPY, which I am about to give to the world, will be of incomparably greater benefit. Its discovery was made accidentally under the following circumstances.

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Tesla, Nikola
Mechanical Therapy
New York, n.d.
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I had installed at the laboratory, 35 South Fifth Avenue, one of my mechanical oscillators with the object of using it in the exact determination of various physical constants. The machine was bolted in vertical position to a platform supported on elastic cushions and, when operated by compressed air, performed minute oscillations absolutely isochronous, that is to say, consuming rigorously equal intervals of time. So perfect was its functioning in this respect that clocks driven by it indicated the hour with astronomical precision. One day, as I was making some observations, I stepped on the platform and the vibrations imparted to it by the machine were transmitted to my body. The sensation experienced was as strange as agreeable, and I asked my assistants to try. They did so and were gratified and pleased like myself. But a few minutes later some of us, who had stayed longer on the platform, felt an unpleasant and pressing necessity which had to be promptly satisfied, and then a stupendous truth dawned upon me. Evidently, these isochronous rapid oscillations stimulated powerfully the peristaltic movements which propel the food-stuffs through the alimentary channels. A means was thus provided whereby their contents can be perfectly regulated and controlled at will, and without the use of drugs, specific remedies or internal applications whatever.

When I began to practice with my assistants MECHANICAL THERAPY we used to finish our meals quickly and rush back to the laboratory. We suffered from dyspepsia and various stomach troubles, biliousness, constipation, flatulence and other disturbances, all natural results of such irregular habit. But after only a week of application, during which I improved the technique and my assistants learned how to take the treatment to their best advantage, all those forms of distress disappeared as by enchantment and for nearly four years, while the machine was in use, we were all in excellent health. I cured a number of people, among them my great friend

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Tesla, Nikola
Mechanical Therapy
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Mark Twain whose book saved my life. He came to the laboratory in New York and was suffering from a variety of distressing and dangerous ailments but in less than a month he regained his old vigor and ability of enjoying life to the fullest extent. Shortly after, a great calamity befall me: my laboratory was destroyed by fire. Nothing was insured and the loss of scientific apparatus and records gave me a terrific shock from which I did not recover for several years. The enforced discontinuance of my CHROMICIL therapy also caused me deep regret. I had evolved a wonderful remedy for all of inestimable value to mankind and invented apparatus offering unbounded possibilities but when I came to consider practical introduction I realized that it was entirely unsuitable. It was big, heavy and noisy, called for a continuous supply of oil, part of which was discharged in the room as fine spray; it consumed considerable power and required a number of objectionable accessories. During the succeeding years I made great improvements and finally evolved a design which leaves nothing to be desired. The machine will be very small and light, operate noiselessly without any lubricant, consume a trifling amount of energy and will be, to my knowledge, the most beautiful device ever put on the market. The intention is to exhibit it in action at the occasion of my annual reception in honor of the Press which has been, unfortunately, delayed this year, and I anticipate that it will elicit great interest and receive wide publicity. Unless I am grossly mistaken it will be introduced very extensively and, eventually, there will be one in every household.

The practical application of MECHANICAL THERAPY through my oscillators will profoundly affect human life. By insuring perfect regularity of evacuations the body will function better in every respect

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Mechanical Therapy
New York, n.d.



and life will become ever so much safer and more enjoyable. One of the most important results will be the great reduction -- amounting possibly to seventy-five per cent -- in the number of heart failures, which are mostly caused by some acute upset of the digestive process and normal operation of the stomach. Another vital improvement will be derived from the quickened removal of toxic excretions of organs affected by disease. It is reasonable to expect that through skin and other healthful actions ulcers and similar internal lesions or abscesses will be cured and relief might be obtained even in case of a cancer or other malignant growth. Skilled physicians and surgeons will be able to perform veritable miracles with such oscillations. They stimulate strongly the liver, spleen, kidneys, bladder and other organs and by these desirable actions they must contribute not a little to well being. Persons suffering from anemia or any form will be especially helped by the treatment. But the greatest benefit will be derived from it by women who will be able to reduce without the usual tantalizing abstinence, privation, sacrifice of time and money and torture they have to endure. They will improve much in appearance, acquire clear eyes and complexions and it may be safely predicted that long continued treatment will bring forth feminine beauty never seen before. It is not to be forgotten that the elimination of countless drugs, patent medicines and specific remedies of all kinds taken internally, by which millions of people doom themselves to an early grave, will be of untold good to humanity.

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WALFRANK SPERRY.
COMMISSIONER
1907

State of New York.
Comptroller's Office.

OFFICE OF
CORPORATION TAX COMMISSIONER,
257 Broadway, New York City.

New York.

Rec 7/67

To *Nikola Tesla Co.*
Babylon D.C.
Waldorf Astoria Hotel City

Dear Sirs:--I am commissioned by the Comptroller of the State of New York to examine the above named Company relative to taxation.

This matter has been set down for hearing on the day of *Dec* 1907, at *113*. The President, Secretary or Treasurer, or, in their absence, the New York Manager of the Company, is required to appear for examination at that time. In case of failure to attend and give evidence in this matter, the company will be taxed, on the maximum amount, on information in possession of the department.

Revision of each assessment can be had at the office of this department in Albany, on proper application.

Respectfully yours,

William S. Thayer

Corporation Tax Commissioner.

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THOS. T. ECHERT, President and General Manager.

7/10 am

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RECEIVED July 12th 190

Dated New York NY 11th

To George Scherff

G. Tesla Works M. Cleffe NY

Please mail her specifications transmission
and ask Engage men to complete both trunks
soon. Tell Lowenstein to be careful in tests

Tesla

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MONEY ORDERS BY TELEGRAPH

SHORT MESSAGES AT REDUCED RATES.

Houston Street March 23. 1900.

My dear Mr. Buell,

Many thanks for the tablets, I think they are good. As to the rose double I have a horror of it such that I would rather go to Hales than to the Egyptian if it were at the price.

Enclosed forward article roasting my
illustrious friend Sir William Crookes who
is burning holes out of me. I wish
on the adjective - "distinguished" would not
do. Luke is mistaken, this is literary
style. Crookes is not distinguished, he
is illustrious.

I have not forgotten the text to be furnished or improved and finished for. Was it for June of this or next year?

Please tell my friend Luke that I expect
 to land in London tomorrow.

Wm. C. C.

H. Testa

18. 6. 1942

LA SPEAKS OUT

Of course, in all that unceasing and deafening shouting from the housetops any voice raised to apprise people of the real state of things is like the chirp of a little sparrow in the roar of Niagara. So it comes that very few have a clear idea of the situation. In truth, my system has not only provided energy for all purposes throughout the world but also revolutionized electric lighting and made it a great commercial success by reducing the cost of power and increasing enormously the distance of transmission. The greater part of the \$50,000,000,000 which, according to President Hoover's statement, represented the value of electric business, can be traced to my system and its effect on the lighting and other industries. In view of this I feel that I also have done much to dispel darkness. Surely, my system is more important than the incandescent lamp, which is but one of the known electric illuminating devices and admittedly not the best. Although greatly improved through chemical and metallurgical advances and skill of artisans, it is still inefficient, and the glaring filament emits hurtful rays responsible for millions of bald heads and spoiled eyes. In my opinion, it will soon be superseded by the electrodeless vacuum tube which I brought out thirty-eight years ago, a lamp much more economical and yielding a light of indescribable beauty and softness. The technical resources of that time were inadequate to make it a practical success, but most of the difficulties will be overcome when cheap quartz glass becomes available.

No amount of praise is too much to bestow upon Edison for his vigorous pioneer work, but all he did was wrought in known and passing forms. What I contributed constitutes a new and lasting addition to human knowledge. Like his lamp, my induction motor may be discarded and forgotten in the continuous evolution of the arts, but my rotating field with its marvelous phenomena and manifestations of force will live as long as science itself.

Edison and his associates bitterly opposed the introduction of my system, raising a clamor against the "deadliness" of the alternating current, which proved very effective and led to the adoption of a commercial type of machine in the electrocution of criminals, an apparatus monstrously unsuitable, for the poor wretches are not despatched in a merciful manner but literally roasted alive. To the observer their sufferings seem to be of short duration; it must be borne in mind, though, that an individual under such conditions, while wholly bereft of the consciousness of the lapse of time, retains a keen sense of pain, and a minute of agony is equivalent to that through all eternity.

Had the Edison companies not finally adopted my invention they would have been wiped out of existence, and yet not the slightest acknowledgment of my labors has ever been made by any of them, a most remarkable instance of the proverbial unfairness and ingratitude of corporations. But the reason is not far to seek. One of their prominent men told me that they are spending \$10,000,000 every year to keep Edison's name before the public, and he added that it is worth more to them.

Of course, in all that unceasing and deafening shouting from the housetops any voice raised to apprise people of the real state of things is like the chirp of a little sparrow in the roar of Niagara. So it comes that very few have a clear idea of the situation.

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NIKOLA TESLA

New York, Nov. 5.

Nikola Tesla

Mr Tesla Speaks Out

To the Editor of the World:

7th. Jan 1900

Permit me a few words of comment relative to your editorial of October 21st in which I am directly concerned.

Edison's work on the incandescent lamp and direct current system of distribution was more like the performance of an extraordinarily energetic and horse-sensed pioneer than that of an inventor; it was prodigious in amount, but not creative. The lamp itself, consisting of a carbon filament in an exhausted globe, was well known and even patented years before; Crookes had employed incandescent conductors with leading-in platinum wires sealed in the glass and obtained extremely high vacua; the multiple arc arrangement was frequently shown at institutions of learning, display windows and exhibitions with Geissler tubes; electric generators had been constructed, means for regulating current and voltage described and canalization of electricity was as obvious as that of water, gas, compressed air or other commodity. Irrespective of this, however, his primitive scheme of lighting was subject to fatal economic limitations and could have never proved a commercial success in competition. Indeed, during the past thirty-five years it has been almost wholly displaced by a more practical and efficient system based on my rotating magnetic field, a discovery which even hard-headed engineers and patent lawyers have declared to be "one of the greatest triumphs of the human mind." To convey an idea of the extent of its use, I only need to quote Dr B.A. Behrend, one of the foremost electrical experts, who in his book on the induction motor says: "Were we to eliminate from our industrial world the results of Mr Tesla's work, the wheels of industry would cease to turn, our electric trains and cars would stop, our towns would be dark, our mills dead and idle. So far-reaching is this work that it has become the warp and woof of industry."

Edison and his associates bitterly opposed the introduction of my system, raising a clamor against the "deadliness" of the alternating current, which proved very effective and led to the adoption of a commercial type of machine in the electrocution of criminals, an apparatus monstrously unsuitable, for the poor wretches are not dispatched in a merciful manner but literally roasted alive. To the observer their sufferings seem to be of short duration; it must be borne in mind though, that an individual under such conditions, while wholly bereft of the consciousness of the lapse of time, retains a keen sense of pain, and a minute of agony is equivalent to that through all eternity.

Had the Edison companies not finally adopted my invention, they would have been wiped out of existence, and yet not the slightest acknowledgment of my labors has ever

me by any of them, a most remarkable instance of proverbial unfairness and ingratitude of corporations. But the reason is not far to seek. One of their prominent men told me that they are spending ten million dollars every year to keep Edison's name before the public, and he added that it is worth more to them. Of course, in all that unceasing and deafening shouting from the housetops, any voice raised to apprise people of the real state of things is like the chirp of a little sparrow in the roar of Niagara. So it comes that very few have a clear idea of the situation. In truth, my system has not only provided energy for all purposes throughout the world, but also revolutionized electric lighting and made it a great commercial success by reducing the cost of power and increasing enormously the distance of transmission. The greater part of the sixty billions of dollars which, according to President Hoover's statement, represented the value of electric business, can be traced to my system and its affect on the lighting and other industries. In view of this I feel that I also have done much to dispel darkness. Surely, my system is more important than the incandescent lamp, which is but one of the known electric illuminating devices and admittedly not the best. Although greatly improved through chemical and metallurgical advances and skill of artisans, it is still inefficient and the glaring filament emits hurtful rays responsible for millions of bald heads and spoiled eyes. In my opinion, it will soon be superseded by the electrodeless vacuum tube which I brought out thirty-eight years ago, a lamp much more economical and yielding a light of indescribable beauty and softness. The technical resources of that time were inadequate to make it a practical success, but most of the difficulties will be overcome when cheap quartz glass becomes available.

✓ No amount of praise is too much to bestow upon Edison for his vigorous pioneer work, but all he did was wrought in known and passing forms. What I contributed constitutes a new and lasting addition to human knowledge. Like his lamp, my induction motor may be discarded and forgotten in the continuous evolution of the arts, but my rotating field with its marvelous phenomena and manifestations of force will live as long as science itself.

New York, November 5, 1933.

Nikola Tesla
No 8 West 40th St
N.Y.C.

New York, July 12th, 1900.

46 & 48 East Houston Street.

Rev. William E. Davenport,

Italian Mission,

29 Front Str., Brooklyn, N. Y.

Reverend Sir:-

In reply to your note to the Century Magazine, which has been forwarded to me through the courtesy of the Editor, I beg to say that I shall be at your service any time during the day, at my office, above address.

Yours respectfully,

N. Tesla

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COLUMBIA UNIVERSITY

card 32

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Es ist unendlich Ihrem hoefflichen Ansuchen, gemacht bei
einer Gelegenheit ~~von so grosser Bedeutung~~ in dem Leben Ihres Jour-
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Zeit und, ~~weil~~ ^{weil} die Kleinheit der Verwirklichungen, ~~so~~ ^{schwerlich}
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und Absonderung der uebertragenen Energie; und, drittens, die Fest-
stellung der Gesetze der Fortpflanzung von Stroemen durch die Erde

DIE UEBERTRAGUNG ELEKTRISCHER ENERGIE OHNE DRAHT.

(Mitgeteilt an Electrical World and Engineer, 5 Maerz, 1904.)

Von Nikola Tesla.

Es ist unmoeglich Ihrem hoefflichen Ansuchen, ~~gemacht~~ bei einer Gelegenheit ~~von so grosser Bedeutung~~ ^{So viel mir bekannt} in den Leben Ihres Journals, zu widerstehn. Ihr Brief hat die Erinnerung an unsere beginnende Freundschaft, ~~an~~ ^{Beziehungen} die ersten unvollkommenen ~~Verenue~~ ^{Dienste} und unerdienten Erfolge, ~~Gefaelligkeiten~~ ^{den} und Missverstaendnisse neu belebt. ~~Er hat~~ ^{Auch schmerzlich} die Grosse fruherer Erwartungen, ~~das~~ ^{den} schnelle ~~Entfaltungen~~ ^{in Bezug} der Zeit und, ~~aus~~ ^{Leider!} die Kleinheit der Verwirklichungen, ~~schmerzlich~~ ^{ins Gedachtnis gerufen.} Die folgenden Zeilen, welche, ~~wenn es~~ ^{ohne} nicht wegen Ihrer Anregung, vielleicht eine lange Zeit der Oeffentlichkeit noch nicht uebergaben worden waeren, sind ein Anerbieten in der freundlichen Stimmung von Alters her, und meine besten Wuensche auf Ihren zukuenftigen Erfolg begleiten sie.

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und die Atmosphäre. Verschiedene Gründe, von denen nicht der geringste war mir von meinem Freunde Leonard E. Curtis und der Colorado Springs Electric Company angebotene Hilfe war, bewogen mich, fuer meine experimentellen Untersuchungen das grosse plateau, zwei tausend Meter ueber der Meeresflaeche, in der Naehs dieses reizenden Kurortes zu waehlen, welchen ich spaet im Mai 1899 erreichte. Kaum war ich einige Tage dort gewesen, als ich mich schon zu der gluecklichen Wahl gratulieren konnte, und ich begann die Aufgabe, fuer welche ich mich lange geschult hatte, mit dankbarem Sinne und voll begeisternder Hoffnung. Die vollkommene Reinheit der Luft, die unvergleichliche Schoenheit des Himmels, der erhabene Anblick einer hohen Gebirgskette - alles rund umher trug dazu bei, die Bedingungen fuer wissenschaftliche Beobachtungen ideal zu machen. Dazu kam noch der belebende Einfluss eines herrlichen Klimas und eine eigenartige Verschaerfung der Sinne. Die Organe unterziehen sich in jenen Regionen merklichen physikalischen Veraenderungen. Die Augen nehmen eine ausserordentliche Klarheit an, was die Sehkraft verbessert; die Ohren troeknen aus und werden empfindlicher gegen Schall. Man kann dort Gegenstaende auf soch grosse Entfernungen unterscheiden, dass ich vorziehe, diese von jemand anders nennen zu lassen, und ich habe - dies kann ich zu bezeugen wagen - sieben und acht hundert Kilometer weit entfernte Donnerschlaege gehoert. Ich haette sie auf noch groessere Entfernungen hoeren koennen, wenn es nicht langweilig gewesen waere, die Ankunft der Laute,

die, welche erfolgte, genau wie sie - fast
eine Voraus - von einem elektrischen Anzeigegerat an-
gezeigt, zu erwarten.

In der Mitte des Monats Juni, waehrend Vorbereitungen
auf andere Arbeit vor sich gingen, stellte ich einen meiner Emp-
fangstransformatoren auf in der Absicht, auf eine neue Weise, ex-
perimentell, das elektrische potentiell der Erdoberflaeche zu bestimmen
und dessen periodische und gelegentliche Schwankungen zu beobach-
ten. Dies war ein Teil eines sorgfaeltig im Voraus entworfenen
Planes. Eine hoechst empfindliche, sich selbst wiederherstellende
Vorrichtung, welche ein registrierendes Instrument kontrollierte,
war in den sekundaren Stromkreis eingeschaltet, waehrend die Pri-
maere mit der Erde und mit einem erhoehten Pol von regulierbarer
Kapazitaet verbunden war. Die Variationen des Potentiells verur-
sachten elektrische Wogungen in der Primaere; diese erzeugten sekun-
daere Stroeme, die wiederum auf die empfindliche Vorrichtung und
den Registrator im Verhaeltnis zu ihrer Intensitaet einwirkten. Es
stellte sich heraus, dass die Erde buchstaeblich mit elektrischen
Schwingungen belebt war, und bald war ich fast gaenzlich in dieser
interessanten Forschung vertieft. Bessere Gelegenheiten zu solchen
Beobachtungen wie ich zu machen beabsichtigte koennten nirgends ge-
funden werden. Colorado ist ein Land, das wegen der Entfaltung na-
tuerlicher elektrischer Kraft beruehmt ist. In der trockenen und
verduennten Atmosphaere scheint die Sonne mit gruenniger Intensitaet

stehend: herab. Ich entwickelte Dampf bis auf einen gefährlichen Druck in mit konzentrierter Salzlosung gefüllten Fässern, und die Staniolaeberzüge einiger meiner erhöhten Pole schrumpften in der feurigen Glut zusammen. Ein experimenteller Hochspannungstransformator, der unvorsichtigerweise den Strahlen der untergehenden Sonne ausgesetzt worden war, wurde durch das Herausschmelzen der Isolationsmischung verderben. Die Trockenheit und Duermheit der Luft traegt dazu bei, dass das Wasser wie in einem Kessel verdampft, und statische Elektrizitaet entwickelt sich in grosser Menge. Blitzentladungen sind demgemass sehr haeufig und mitunter von unbegreiflicher Heftigkeit. Bei einer Gelegenheit fanden in zwei Stunden annaehernd zweielf tausend Entladungen statt, und alle in einem Radius von gewiss weniger als fuenfzig Kilometer vom Laboratorium. Viele derselben glichen riesenhaften Baeeumen aus Feuer mit den Staemmen nach oben oder unten. Kugelblitze habe ich nicht gesehen, aber als Belohnung fuer meine Enttaeuschung gelang es mir spaeter, die Art ihrer Bildung zu bestimmen und sie kuenstlich zu erzeugen.

Am Ende desselben Monats bemerkte ich mehrere Male, dass meine Instrumente durch Entladungen, die in grosser Entfernung stattfanden, staerker beeinflusst wurden, als durch solche in der Naehе. Das war fuer mich ein grosses Raetsel. Was war die Ursache? Eine Reihe von Beobachtungen bewies, dass es nicht von dem Unterschiede in der Intensitaet zwischen den einzelnen Entladun-

Das Phänomen, und ich stellte leicht fest, ~~was ich stellte~~
das das Phänomen nicht das Resultat eines variieren-
des zwischen den Perioden meiner Empfaengerstromkrei-
se und denen der irdischen Störungen war. Eines Abends, als ich
mit einem Assistenten hantirte und ueber diese Erfahrungen nach-
sann, ueberwaeltigte mich ploetzlich ein Gedanke. Vor Jahren, als
ich ein Kapitel meines Vortrages vor dem Franklin Institute und
der National Electric Light Association schrieb, war er mir auch
eingefallen, aber ich hatte ihn als absurd und unmoeglich verworfen.
Ich verbannte ihn wieder. Mein Instinkt war jedoch wach gerufen,
und ich fuehlte irgendwie, dass ich mich einer grossen Offenbarung
naeherte.

Es war am dritten Juli - das Datum werde ich nie vergessen -
als ich den ersten entscheidenden, experimentellen Beweis einer
Wahrheit von ueberwaeltigender Wichtigkeit fuer den Fortschritt der
Menschheit erhielt. Eine dunkle, stark geladene Wolkenmasse sam-
melte sich im Westen. Gegen Abend brach ein heftiges Gewitter los,
welches, nachdem es einen betraechtlichen Teil seiner Gewalt in den
Bergen von sich gegeben hatte, mit grosser Geschwindigkeit ueber
die Ebene dahingejagt wurde. Dicke und lang anhaltende Bogen bil-
deten sich in fast regelmaessigen Zwischenraeumen. Meine Beobach-
tungen waren nun sehr erleichtert, und die schon gewonnenen Erfah-
rungen machten sie genauer. Ich war instande, meine Instrumente
schnell zu manipulieren und ich war vorbereitet. Da der Registrier-

apparate. Die Anschläge wurden seine Anschläge mit der zunehmenden Entfernung des Gewitters schwächer und schwächer, bis sie nicht mehr zu hören waren. Ich beobachtete in beständiger Erwartung. Und wirklich, nach einer kleinen Weile fingen die Anschläge wieder an, wurden stärker und stärker und, nachdem sie ein Maximum überschritten hatten, wurden sie allmählich schwächer und hörten wieder auf. Viele Male wiederholten sich dieselben Wirkungen in regelmässig wiederkehrenden Zwischenräumen bis der Sturm, der, wie einfache Berechnungen erwiesen, sich mit fast gleichmässiger Geschwindigkeit bewegte, sich auf eine Entfernung von etwa dreihundert Kilometer zurückgezogen hatte. Und auch dann liessen diese seltsamen Wirkungen noch nicht nach, sondern fuhren fort, sich mit unverminderter Staerke zu offenbaren. Später wurden ähnliche Beobachtungen auch von meinem Assistenten, Herrn Fritz Loewenstein, gemacht, und kurz nachher boten sich mehrere vortreffliche Gelegenheiten dar, die das wirkliche Wesen des wunderbaren Phaenomens noch kraeftiger und unverkennbar an den Tag brachten. Es blieb kein Zweifel; Ich beobachtete stehende Wellen.

Indem die Quelle der Störungen sich fortbewegte, kam der Empfaengerstromkreis nacheinander auf ihre Knoten- und Bauchpunkte. So unmöglich es auch schien, verhielt sich dieser planet, trotz seines gewaltigen Umfanges, wie ein Leiter von beschränkten Dimensionen. Die ungeheure Bedeutung dieser Tatsache fuer die Uebertragung von Energie nach meinem System war mir schon ganz klar gewor-

den. Nur war es möglich, ohne Draht telegraphische Botschaften über irdischer Entfernung zu senden, was ich schon vor langer Zeit erkannt hatte, sondern auch die schwachen Modulationen der menschlichen Stimme konnten der ganzen Erdoberfläche aufgeprägt werden, und vielmehr noch, man konnte Kraft in unbegrenzten Quantitäten auf jede beliebige irdische Entfernung und fast ohne Verlust übertragen.

Mit diesen erstaunlichen Möglichkeiten in Aussicht, mit dem experimentellen Beweise vor mir, dass ihre Verwirklichung von nun an nur eine Frage von Fachkenntnis, Geduld und Geschicklichkeit war, nahm ich die Entwicklung meines Sendemultiplikators kräftig in Angriff, jetzt jedoch nicht so sehr mit der ursprünglichen Absicht, einen solchen von grosser Kraft zu erzeugen, sondern vielmehr zu dem Zwecke, den besten konstruieren zu lernen. Dies ist im Wesentlichen ein Stromkreis sehr hoher Selbstinduktion und geringen Widerstandes, den man wol einem typischen, in der Telegraphie mit Hertz'schen oder elektromagnetischen Wellen benutzten Stromkreise als gerade entgegengesetzt bezeichnen kann. Es ist schwer, sich von der wunderbaren Kraft dieser eigenartigen Vorrichtung einen Begriff zu machen. Da die elektromagnetischen Strahlungen auf eine unbedeutende Quantität herabgesetzt und richtige Resonanzverhältnisse aufrecht erhalten werden, wirkt der Stromkreis wie ein ungeheures Pendulum, indem er die primären Erregerimpulse unbegrenzt aufspeichert und der Erde und ihrer leitenden Atmosphäre gleich-

1000000 harmonische Schwingungen aufprägt, deren Intensitäten, wie wirkliche Versuche gezeigt haben, so weit getrieben werden können, dass sie diejenigen, welche bei der natürlichen Entladung statischer Elektrizität erreicht werden, übertreffen.

Gleichzeitig mit diesen Bestrebungen wurden auch die Mittel der Individualisierung und Absonderung der Energie allmählich verbessert. Grosse Wichtigkeit wurde dieser Arbeit beigemessen, denn es fand sich, dass einfaches Abstimmen nicht hinreichte, um den strengen praktischen Erfordernissen gerecht zu werden. Die fundamentale Idee, zum Zwecke der Absonderung der übertragenen Energie eine Anzahl absonderlicher, kooperativ vereinigter Elemente anzuwenden, führe ich direkt auf meine Lektüre von Spencer's klarer und anregender Auslegung des menschlichen Nervenmechanismus zurück. Welchen Einfluss dieses Prinzip auf die Übertragung von Intelligenz und elektrischer Energie im Allgemeinen haben wird, kann jetzt noch nicht abgeschätzt werden, denn die Kunst ist noch im Keimzustande; aber die gleichzeitige Übermittlung von tausenden von telegraphischen oder telephonischen Botschaften durch einen einzigen Leitungskanal, sei er natürlich oder künstlich, ohne gefährliche gegenseitige Störung, ist gewiss thunlich, während Millionen möglich sind. Andererseits kann durch Anwendung einer grossen Anzahl kooperativer Elemente und willkürliche Absonderung ihrer absonderlichen Eigenschaften und ihrer Reihenfolge ~~irgen~~ ein beliebiger Grad der Individualisierung erreicht werden. Aus augenscheinli-

chen Gruenden wird dieses Prinzip auch fuer die Erweiterung der Uebertragungsentfernung von Wert sein.

Der Fortschritt, obgleich noewendigerweise langsam, war bestaendig und sicher, denn die Ziele, nach denen ich strebte, waren in der Richtung meiner fortwachsenden Studien und Taetigkeit. Es ist deshalb kein Wunder, dass ich schon vor Ende des Jahres 1899 die unternommene Aufgabe beendete und die Resultate erreichte, welche ich in meinem Artikel im Century Magazine vom Juni, 1900, in dem jedes Wort sorgfaeltig gewogen wurde, anzeigte.

Es ist schon viel getan, um mein System kommerziellem Gebrauch zur Verfuegung zu stellen, sowol zur Uebertragung von Energie in kleinen Quantitaeten fuer spezifische Zwecke, als auch auf industriellem Maassstabe. Die von mir erzielten Resultate haben meinen Plan der Intelligenzuebermittlung; fuer welche der Name "Welttelegraphie" vorgeschlagen worden ist, leicht ausfuehrbar gemacht. Das Prinzip ihrer Wirkung, die angewandten Mittel und ihre Anwendungsfahigkeiten bilden, glaube ich, eine radikale und fruchtbare Abweichung von dem, was vorher getan worden ist. Ich habe keinen Zweifel, dass sie sich fuer die Aufklaerung der Massen, besonders in noch uncivilisierten Laendern und schwer zuganglichen Regionen, sehr wirksam erweisen, und dass sie zur allgemeinen Sicherheit, Bequemlichkeit und Wolsein, und der Aufrechterhaltung friedlicher Verhaeltnisse wesentlich beitragen wird. Sie bedingt die Anwendung einer Anzahl von Anlagen, welche alle instande sind,

individualisierte Signale nach den äussersten Grenzen der Erde zu senden. Jede derselben wird vorzugsweise in der Nahe eines wichtigen Civilisationspunktes gelegen sein, und die Nachrichten, welche sie durch beliebige Mittel und Wege empfängt, werden nach allen Punkten der Erde geblitzt. Eine billige und einfache Vorrichtung, die man in der Tasche tragen könnte, kann dann irgendwo auf See oder Land aufgestellt werden, und wird die Neuigkeiten der Welt, oder solche spezielle Depeschen, die fuer sie bestimmt sind, verzeichnen. Auf diese Weise wird die ganze Erde so zu sagen in ein riesiges Gehirn verwandelt werden, welches imstande ist, in jedem Teile die Mitteilungen aufzunehmen. Da eine einzige Anlage von nur hundert Pferdestärken hunderte Millionen von Instrumenten betätigen kann, wird das System ein tatsächlich unbegrenztes Arbeitsvermögen haben, und muss notwendigerweise die Uebermittlung von Intelligenz ungeheuer erleichtern und billiger machen.

Die erste dieser Centralanlagen wäre schon beendet, wenn sich nicht unvorhergesehene Verzögerungen eingestellt hätten, die jedoch glücklicherweise nichts mit dem rein technischen Charakter zu tun haben. Aber dieser Zeitverlust, obgleich verdriesslich, dürfte sich schliesslich doch als ein Segen in Verkleidung erweisen. Die beste mir bekannte Konstruktion ist gewählt worden, und der Sender wird einen Wellenkomplex von einer gesamten maximalen Aktivität von zehn Millionen Pferdestärken, von welcher ein Prozent reichlich genug ist, "die Erdkugel zu umgerten", von sich geben. Der Effekt dieser ungeheuren Energieabgabe, fast zweimal so

sol als die gesamten Niagaraquellen, kann nur durch Anwendung gewisser Kunstgriffe, die ich seiner Zeit bekannt machen werde, erzielt werden.

~~Der~~ Einen grossen Teil der Arbeit, die ich bis jetzt getan habe, habe ich der edlen Grossmutter Herrn J. Pierpont Morgan's zu verdanken, die um so willkommener und ermutigender war, weil sie zu einer Zeit gewahrt wurde als diejenigen, die seitdem am meisten versprochen haben, die grössten Zweifler waren. Auch meinen Freund Stanford White muss ich fuer viele uneigennuetzige und wertvolle Hilfe danken. Diese Arbeit ist nun weit vorgeschritten, und wenn auch die Resultate verspuetet sind, werden sie doch sicher kommen.

Die Uebertragung von Energie auf industriellem Maassstabe wird mittlerweile nicht vernachlaessigt. Die Canadian Niagara Power Company hat mir ein vorzuegliches Angebot gemacht, und eine fast eben so grosse Genugthuung als das Erbringen von Erfolg der Kunst halber wird es mir verschaffen, ihre Konzession fuer sie finanziell vorteilhaft zu machen. In dieser ersten Kraftanlage, mit deren Entwurf ich seit langer Zeit beschaeftigt bin, beabsichtige ich, zehn tausend Pferdekraefte unter einer Spannung von hundert Millionen Volt, die ich jetzt mit Sicherheit erzeugen und ha^{ab}haben kann, zu verteilen.

Diese Energie wird ueberall auf der Erde gesammelt werden, vorzugsweise in kleinen Quantitaeten, von einem Bruchteil einer bis

...wird die ... einer ihrer Hauptanwendungen wird die ...
... werden ... kleiner Heinstationen sein. Es ^{bedacht} ~~bedacht~~
... eine Wohnung mit Vakuumrohren, die von Hochfre-
quenzströmen erregt werden, zu erleuchten, und in jedem Falle wird
ein ein wenig ueber dem Dach erhobener Pol hinreichen. Noch ein
wertvoller Gebrauch wird das Anreiben von Uhren und dergleichen
Apparate sein. Diese Uhren werden ausserordentlich einfach sein,
werden absolut keiner Wartung beduerfen und werden genau die rich-
tige Zeit angeben. Die Idee der Erde amerikanische Zeit aufzuprae-
gen ist bezaubernd und wird sehr wahrscheinlich populaer werden.
Es giebt unzählbare Vorrichtungen aller Arten, die entweder jetzt
im Gebrauch sind oder geliefert werden koennen, und indem ich sie
auf diese Weise in Betrieb setze, ^{duerfte} ~~duerfte~~ ich imstande sein, mit
einer Anlage von nicht mehr als zehn tausend Pferdestaerken der
ganzen Welt eine grosse Kommoditaet zu bieten. Die Einfuehrung die-
ses Systems wird Gelegenheiten gewaehren fuer Erfindung und Fabri-
kation, wie sie sich noch nie vorher dargeboten haben.

Da ich der weitreichenden Wichtigkeit dieses ersten Ver-
suchs und dessen Einfluss auf zukuenftige Entwicklung gewaertig
bin, werde ich langsam und sorgfaeltig zu Werke gehen. Erfahrung
hat mich gelehrt fuer Unternehmungen, die nicht gaenzlich von mei-
nen eigenen Faehigkeiten und Anstrengungen abhaengen, einen Termin
festzusetzen. Aber ich bin voller Hoffnung, dass diese grossen Ver-
wirklichungen nicht weit entfernt sind, und ich weiss dass, wenn
dieses erste Werk vollendet ist, sie mit mathematischer Gewissheit
folgen werden.

Wenn die grosse, zufaellig enthuelte und experimentell
bestaetigte Wahrheit voellig erkannt wird, dass dieser Planet, bei
all seiner erschreckenden Unermesslichkeit, fuer elektrische Stroe-
me tatsaechlich nichts mehr ist als eine kleine Metallkugel und
dass ~~infolge~~ dieser Tatsache die Verwirklichung vieler Moeglichkei-
ten, von denen jede der Einbildungskraft spottet und von unberechen-
barer Bedeutung ist, absolut sicher macht; wenn die erste Anlage in
Betrieb gesetzt und bewiesen wird, dass eine telegraphische Bot-
schaft, fast so geheim und unstoerbar wie ein Gedanke, auf irgend
eine irdische Entfernung uebertragen werden, dass der Schall der
menschlichen Stimme, mit allen ihren Intonationen und Modulationen,
getreu und augenblicklich an irgend einer andern Stelle der Erde
wieder erzeugt werden, dass die Energie eines Wasserfalles zur
Lieferung von Licht, Waerme und Triebkraft, irgendwo - auf See, oder
Land oder hoch oben in der Luft - verwendbar gemacht werden kann,
dann wird die Menschheit sein wie ein Ameisenhaufe, den man mit
einem Stock aufgeruehrt hat: Sehet die Aufregung die da kommt!

MY INVENTIONS

by Nikola Tesla.

VI. The Art of Telautomatics.

How Tesla's Mind Recuperates.

No subject to which I have ever devoted myself has called for such concentration of mind and strained to so dangerous a degree the finest fibers of my brain as the system of which the Magnifying Transmitter is the foundation. I put all the intensity and vigor of youth in the development of the rotating field discoveries, but those early labors were of a different character. Although strenuous in the extreme, they did not involve that keen and exhausting discernment which had to be exercised in attacking the many puzzling problems of the wireless. Despite my rare physical endurance at that period the abused nerves finally rebelled and I suffered a complete collapse, just as the consummation of the long and difficult task was almost in sight. Without doubt I would have paid a greater penalty later, and very likely my career would have been prematurely terminated, had not providence equipped me with a safety device, which has seemed to improve with advancing years and unfailingly comes into play when my forces are at an end. So long as it operates I am safe from danger, due to overwork, which threatens other inventors and, incidentally, I need no vacations

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which are indispensable to most people. When I am all but used up I simply do as the darbies, who "naturally fall asleep while white folks worry". To venture a theory out of my sphere - the body probably assimilates little by little a definite quantity of food and I sink into a nearly lethargic state which lasts half an hour to the minute. Upon awakening I have the sensation as though the events immediately preceding had occurred very long ago, and if I attempt to continue the interrupted train of thought I feel a veritable mental nausea. Involuntarily I then turn to other work and am surprised at the freshness of the mind and ease with which I overcome obstacles that had baffled me before. After weeks or months my passion for the temporarily abandoned invention returns and I invariably find answers to all the vexing questions with scarcely any effort.

In this connection I will tell of an extraordinary experience which may be of interest to students of psychology. I had produced a striking phenomenon with my grounded transmitter and was endeavoring to ascertain its true significance in relation to the currents propagated through the earth. It seemed a hopeless undertaking and for more than a year I worked unremittingly but in vain. This profound study so entirely absorbed me that I became forgetful of everything else, even of my undermined health. At last, as I was at the point of breaking down, nature applied the preservative inducing lethal sleep. Regaining my senses, I realized with consternation that I was

unable to visualize scenes from my life except those of infancy, the very first ones that had entered my consciousness. Curiously enough, these appeared before my vision with startling distinctness and afforded welcome relief. Night after night, when retiring, I would think of them and more and more of my previous existence was revealed. The image of my mother was always the principal figure in the spectacle that slowly unfolded, and a consuming desire to see her again gradually took possession of me. This feeling grew so strong that I resolved to drop all work and satisfy my longing. But I found it too hard to break away from the laboratory and several months elapsed during which I had succeeded in reviving all the impressions of my past life up to the spring of 1892. In the next picture that came out of the mist of oblivion, I saw myself at the Hotel de la Paix in Paris just coming to from one of my peculiar sleeping spells, which had been caused by prolonged exertion of the brain. Imagine the pain and distress I felt when it flashed upon my mind that a dispatch was handed to me at that very moment bearing the sad news that my mother was dying; I remembered how I made the long journey home without an hour of rest and how she passed away after weeks of agony! It was especially remarkable that during all this period of partially obliterated memory I was fully alive to everything touching on the subject of my research. I could recall the smallest details and the least insignificant observations in my experiments and even recite pages of text and complex mathematical formulae.

My belief is firm in a law of compensation. The true rewards are ever in proportion to the labor and sacrifices made. This is one of the reasons why I feel certain that of all my inventions, the Magnifying Transmitter will prove most important and valuable to future generations. I am prompted to this prediction not so much by thoughts of the commercial and industrial revolution which it will surely bring about, but of the humanitarian consequences of the many achievements it makes possible. Considerations of mere utility weigh little in the balance against the higher benefits of civilization. We are confronted with portentous problems which can not be solved just by providing for our material existence, however abundantly. On the contrary, progress in this direction is fraught with hazards and perils not less menacing than those born from want and suffering. If we were to release the energy of atoms or discover some other way of developing cheap and unlimited power at any point of the globe this accomplishment, instead of being a blessing, might bring disaster to mankind in giving rise to dissension and anarchy which would ultimately result in the enthronement of the hated regime of force. The greatest good will come from technical improvements tending to unification and harmony, and my wireless transmitter is preëminently such. By its means the human voice and likeness will be reproduced everywhere and factories

driven thousands of miles from waterfalls furnishing the power; aerial machines will be propelled around the earth without a stop and the sun's energy controlled to create lakes and rivers for motive purposes and transformation of arid deserts into fertile land. The introduction for telegraphic, telephonic and similar uses will automatically cut out the statics and all other interferences which at present impose narrow limits to the application of the wireless. This is a timely topic on which a few words might not be amiss.

Tesla Raps "Static" Men Vigorously.

During the past decade a number of people have arrogantly claimed that they had succeeded in doing away with this impediment. I have carefully examined all of the arrangements described and tested most of them long before they were publicly disclosed, but the finding was uniformly negative. A recent official statement from the U. S. Navy may, perhaps, have taught some beguileable news editors how to appraise these announcements at their real worth. As a rule the attempts are based on theories so fallacious that whenever they come to my notice I can not help thinking in a lighter vein. Quite recently a new discovery was heralded, with a deafening flourish of trumpets, but it proved another case of a mountain bringing forth a mouse. This reminds me of an exciting incident which took place years ago when I was conducting my experiments with currents of high frequency. Steve Brodie had just jumped off the Brooklyn Bridge. The feat has been vulgarized since by imitators, but the

first night in New York. I was very impressionable
and I immediately spoke of the daring printer. On a hot
afternoon I felt the necessity of refreshing myself and
stepped into one of the popular thirty thousand institutions
of this great city where a delicious twelve per cent beverage
was served which can now be had only by making a trip to the
poor and devastated countries of Europe. The attendance was
large and not over-distinguished and a matter was discussed
which gave me an admirable opening for the careless remark:
"This is what I said when I jumped off the bridge". No soon-
er had I uttered these words than I felt like the companion
of Timotheus in the poem of Schiller. In an instant there was
a pandemonium and a dozen voices cried: "It is Brodie!" I
threw a quarter on the counter and bolted for the door but
the crowd was at my heels with yells: "Stop, Steve!" which
must have been misunderstood for many persons tried to hold
me up as I ran frantically for my haven of refuge. By darting
around corners I fortunately managed - through the medium of
the fire-escape - to reach the laboratory, which I threw off
my coat, camouflaged myself as a hard working blacksmith, and
started the forge. But these precautions proved unnecessary;
I had eluded my pursuers. For many years afterward, at night,
when imagination turns into spectres the trifling troubles of
the day, I often thought, as I tossed on the bed, what my fate
would have been had that mob caught me and found out that I
was not Steve Brodie!

Now the engineer, who lately gave an account before a technical body of a novel remedy against statics based on a "heretofore unknown law of nature", seems to have been as reckless as myself when he contended that these disturbances propagate up and down, while those of a transmitter proceed along the earth. It would mean that a condenser, as this globe, with its gaseous envelop, could be charged and discharged in a manner quite contrary to the fundamental teachings propounded in every elemental text-book of physics. Such a supposition would have been condemned as erroneous, even in Franklin's time, for the facts bearing on this were then well-known and the identity between atmospheric electricity and that developed by machines was fully established. Obviously, natural and artificial disturbances propagate through the earth and the air in exactly the same way, and both set up electro-motive forces in the horizontal, as well as vertical, sense. Interference can not be overcome by any such methods as were proposed. The truth is this: In the air the potential increases at the rate of about fifty volts per foot of elevation, owing to which there may be a difference of pressure amounting to twenty, or even forty thousand volts between the upper and lower ends of the antenna. The masses of the charged atmosphere are constantly in motion and give up electricity to the conductor, not continuously but rather disruptively, this producing a grinding noise in a sensitive telephonic

receivers. The higher the terminal and the greater the space encompassed by the wires, the more pronounced is the effect, but it must be understood that it is purely local and has little to do with the real trouble. In 1900, while perfecting my wireless system, one form of apparatus comprised four antennae. These were carefully calibrated to the same frequency and connected in multiple with the object of magnifying the action, in receiving from any direction. When I desired to ascertain the origin of the transmitted impulses, each diagonally situated pair was put in series with a primary coil energizing the detector circuit. In the former case the sound was loud in the telephone; in the latter it ceased, as expected, the two antennae neutralizing each other, but the true statics manifested themselves in both instances and I had to devise special preventives embodying different principles.

The Remedy For Statics.

By employing receivers connected to two points of the ground, as suggested by me long ago, this trouble caused by the charged air, which is very serious in the structures as now built, is nullified and besides, the liability of all kinds of interference is reduced to about one-half, because of the directional character of the circuit. This was perfectly self-evident, but came as a revelation to some simple-minded wireless folks whose experience was confined to forms of apparatus that could have been improved with an axe, and they have been disposing of the bear's skin before

killings. If it were true that strays performed such antics, it would be easy to get rid of them by receiving without serials. But, as a matter of fact, a wire buried in the ground which, conforming to this view, should be absolutely immune, is more susceptible to certain extraneous impulses than one placed vertically in the air. To state it fairly, a slight progress has been made, but not by virtue of any particular method or device. It was achieved simply by discarding the enormous structures, which are bad enough for transmission but wholly unsuitable for reception, and adopting a more appropriate type of receiver. As I pointed out in a previous article, to dispose of this difficulty for good, a radical change must be made in the system, and the sooner this is done the better.

Radio Government Control Not Wanted.

It would be calamitous, indeed, if at this time when the art is in its infancy and the vast majority, not excepting even experts, have no conception of its ultimate possibilities, a measure would be rushed through the legislature making it a Government monopoly. This was proposed a few weeks ago by Secretary Daniels, and no doubt that distinguished official has made his appeal to the Senate and House of Representatives with sincere conviction. But universal evidence unmistakably shows that the best results are always obtained in healthful commercial competition. There are, however, exceptional reasons why ^{wireless} A should be given the fullest freedom of

development. In the first place it offers prospects immeasurably greater and more vital to betterment of human life than any other invention of civilization in the history of man. Then again, it must be understood that this wonderful art has been, in its entirety, evolved here and can be called "American" with more right and propriety than the telephone, the incandescent lamp or the aeroplane. Enterprising press agents and stock jobbers have been so successful in spreading misinformation that even so excellent a periodical as the Scientific American accords the chief credit to a foreign country. The Germans, of course, gave us the Hertz-waves and the Russian, English, French and Italian experts were quick in using them for signalling purposes. It was an obvious application of the new agent and accomplished with the old classical and unimproved induction coil-scarcely anything more than another kind of heliography. The radius of transmission was very limited, the results attained of little value, and the Hertz oscillations, as a means for conveying intelligence, could have been advantageously replaced by sound-waves, which I advocated in 1891. Moreover, all these attempts were made three years after the basic principles of the wireless system, which is universally employed today, and its potent instrumentalities had been clearly described and developed in America. No trace of those Hertzian appliances and methods remains today. We have proceeded in the very opposite direction and what has been done is the product of the brains and efforts of citizens of this country. The fundamental patents have expired and the opportunities are open to all. The chief argument of the Secretary is based on interference. According to his statement reported in the New York Herald of July 29th, signals from a powerful station can be intercepted in every village of the world. In view of this fact, which was demonstrated in my experiments of 1900, it would be of little

America First.

use to ~~these~~ restrictions in the United States. PAs throwing light on this point, I may mention that only recently an odd looking gentleman called on me with the object of enlisting my services in the construction of world transmitters in some distant land. "We have no money," he said, "but carloads of solid gold and we will give you a liberal amount." I told him that I wanted to see first what will be done with my inventions in America and this ended the interview. But I am satisfied that some dark forces are at work, and as time goes on the maintenance of continuous communication will be rendered more difficult. The only remedy is a system immune against interruption. It has been perfected, it exists, and all that is necessary is to put it in operation.

The terrible conflict is still uppermost in the minds and perhaps the greatest importance will be attached to the Magnifying Transmitter as a machine for attack and defense, more particularly in connection with telautomatics. This invention is a logical outcome of observations begun in my boyhood and continued throughout my life. When the first results were published, the Electrical Review stated editorially that it would become one of the "most potent factors in the advance and civilization of mankind". The time is not distant when this prediction will be fulfilled. In 1898 and 1900 it was offered to the Government and might have been adopted were I

... those who would go to Alexander's shepherd when they
want something from Alexander. At that time I really thought
that it would abolish war, because of its unlimited destruc-
tiveness and elimination of the personal element of combat.
But while I have not lost faith in its potentialities, my
views have changed since.

The Road To Permanent Peace.

War can not be avoided until the physical cause
for its recurrence is removed and this, in the last analysis,
is the vast extent of the planet on which we live. Only
through annihilation of distance in every respect as, the con-
veyance of intelligence, transport of passengers and supplies
and transmission of energy will conditions be brought about
some day, insuring permanency of friendly relations. What we
now want most is closer contact and better understanding be-
tween individuals and communities all over the earth, and
the elimination of that fanatic devotion to exalted ideals
of national egoism and pride which is always prone to plunge
the world into primeval barbarism and strife. No League or
parliamentary act of any kind will ever prevent such a cal-
amity. These are only new devices for putting the weak at
the mercy of the strong. I have expressed myself in this
regard fourteen years ago when a combination of few leading
governments - a sort of Holy Alliance - was advocated by
the late Andrew Carnegie, who may be fairly considered as

the author of this idea, having given to it more publicity and
than anybody else
prior to the efforts of the President. While it can
not be denied that such a pact might be of material advantage
to some less fortunate peoples, it can not attain the chief
object sought. Peace can only come as a natural consequence
of universal enlightenment and merging of races, and we are
still far from this blissful realization. As I view the
world of today, in the light of the gigantic struggle we have
witnessed, I am filled with conviction that the interests of
humanity would be best served if the United States remained
true to its traditions and kept out of "entangling alliances".
Situated as it is, geographically, remote from the theaters
of impending conflicts, without incentive to territorial
aggrandizement, with inexhaustible resources, and immense
population thoroughly imbued with the spirit of liberty and
right, this country is placed in a unique and privileged
position. It is thus able to exert, independently, its col-
ossal strength and moral force to the benefit of all, more
judiciously and effectively, than as member of a league.

In one of these biographical sketches, published in the Electrical Experimenter, I have dwelt on the circumstances of my early life and told of an affliction which compelled me to unremitting exercise of imagination and self-observation. This mental activity, at first involuntary under the pressure of illness and suffering, gradually became second nature and led me finally to recognize that I was but an automaton devoid of free will in thought and action and merely responsive to the forces of the environment. Our bodies are of such complexity of structure, the motions we perform are so numerous and involved, and the external impressions on our sense organs to such a degree delicate and elusive that it is hard for the average person to grasp this fact. And yet nothing is more convincing to the trained investigator than the mechanistic theory of life which had been, in a measure, understood and propounded by Descartes three hundred years ago. But in his time many important functions of our organism were unknown and, especially with respect to the nature of light and the construction and operation of the eye, philosophers were in the dark. In recent years the progress of scientific research in these fields has been such as to leave no room for a doubt in regard to this view on which many works have been published. One of its ablest and most eloquent exponents is, perhaps, Felix Le Dantec, formerly assistant of Pasteur. Prof. Jacques Loeb has performed remarkable experiments in heliotropism, clearly establishing the controlling power of light in

willing or unwilling deceiver. Just to illustrate how deeply rooted this tendency has become even among the clear-headed Psychic Phenomena in the Manufacture of Flivvers. ^{Part} American population, I may mention a comical incident. Shortly before the war, when the exhibition of my turbines in this City elicited widespread comment in the technical papers, I anticipated that there would be a ^{scramble} ~~rush~~ among manufacturers to get hold of the invention and I had particular designs on that man from Detroit who has an uncanny faculty for accumulating millions. So ^{confident} ~~sure~~ was I that he would turn up some day, ~~at my office~~ that I declared this as certain to my secretary and assistants. Sure enough, one fine morning a body of engineers, ^{from} ~~representing~~ the Ford Motor Company presented themselves with the request of discussing with me an important project. "Didn't I tell you?" I remarked triumphantly to my employes, and one of them said, "You are wonderfully Mr. Tesla, everything comes out exactly as you predict." As soon as these ^{hard-headed} ~~distinguished~~ men were seated I, of course, immediately began to extol the wonderful features of my turbine when the spokesman interrupted me and said, "We know all about this but we are on a special errand. We ^{have} formed a psychological society for the investigation of psychic phenomena and we want you to join us in this undertaking." I suppose these engineers never knew how near they came to being fired out of my office.

COMPUTING SPIRITISM.

Ever since I was told by some of the greatest men of the time, leaders in science whose names are immortal, that I am possessed of an unusual mind, I bent all my thinking faculties on the solution of great problems regardless of sacrifice.

For many years I endeavored to solve the enigma of death and watched eagerly for every kind of spiritual indication. But only once in the course of my existence have I had an experience which, momentarily, impressed me as supernatural. It was at the time of my mother's death. I had become completely exhausted by pain and long vigilance and one night was carried to a building about two blocks from our home. As I lay helpless there, I thought that if my mother died while I was away from her bedside she would surely give me a sign. Two or three months before I was in London in company with my late friend, Sir William Crookes, when spiritualism was discussed and I was under the full sway of these thoughts. I might not have paid attention to other men but was susceptible to his arguments as it was his epochal work on radiant matter, which I had read as a student, that made me embrace the electrical career. I reflected that the conditions for a look into the beyond were most favorable, for my mother was a woman of genius and particularly excelling in the powers of intuition. During the whole night every fiber in my brain was strained in expectancy, but nothing happened, ^{until} ~~and~~ early in the morning ^{when} I fell in a sleep or perhaps a swoon, and saw a cloud carrying angelic figures of marvelous beauty, one of whom gazed upon me lovingly and gradually assumed the features of my mother. The appearance slowly floated across the room and vanished and I was awakened by an indescribably sweet song of many voices. In that instant a certitude, which no words can express, came upon me that my mother had ^{just} died. And that was true. I ~~have never~~

was
unable to understand the tremendous weight of the painful knowledge I received in advance and wrote a letter to Sir William Crookes while still under the domination of these impressions and in poor bodily health. When I recovered I sought for a long time the external cause of this strange manifestation and, to my great relief, I succeeded after many months of fruitless effort. I had seen the painting of a celebrated artist, representing allegorically one of the seasons in the form of a cloud with a group of angels which seemed to actually float in the air, and this had struck me forcefully. It was exactly the same that appeared in my dream with the exception of my mother's likeness. The music came from the choir in the church ^{nearby} at the early mass of Easter morning, explaining everything satisfactorily in conformity with scientific facts.

This occurred long ago and I have never had the faintest reason since to change my views on psychical and spiritual phenomena for which there is absolutely no foundation. The belief in these is the natural outgrowth of intellectual development. Religious dogmas are no longer accepted in their orthodox meaning but every individual clings to some faith in a Supreme power of some kind. We ^{all} must have ^{an} ideal to govern our conduct and insure contentment but it is immaterial whether it be one of creed, art, science or anything else, so long as it fulfills the function of a dematerializing force. It is essential to the peaceful existence of humanity as a whole that one common conception should prevail.

Tesla's Anticipating Discovery.

While I have failed to obtain any evidence in support

of the ~~conviction~~ of psychologists and spiritualists, I have proved to my complete satisfaction the automatism of life, not only through continuous observations of individual actions, but even more conclusively, through certain generalizations. These amount to a discovery which I consider of the greatest moment to human society and on which I shall briefly dwell. I got the first inkling of this astounding truth when I was still a very young man, but for many years I interpreted what I noted simply as coincidences. Namely, whenever either myself or a person to whom I was attached, or a cause to which I was devoted, was hurt by others in a particular way, which might be best popularly characterized as the most unfair imaginable, I experienced a singular and undefinable pain which, for want of a better term, I have qualified as "cosmic", and shortly thereafter, and invariably, those who had inflicted it came to grief. After many such cases I confided this to ^{a number of friends,} ~~others~~ who had the opportunity to convince themselves of the truth of the theory which I ^{have} ~~am~~ gradually formulated and which may be stated in the following few words.

Our bodies are of similar construction and exposed to the same external influences. This results in likeness of response and concordance of the general activities on which all our social and other rules and laws are based. We are automata entirely controlled by the forces of the medium, being tossed about like corks on the surface of the water, but mistaking the resultant of the impulses from the outside for free will. The movements and other actions we perform are always life-preservative

and though seemingly quite independent from one another, we are connected by invisible links. So long as the organism is in order it responds accurately to the agents that prompt it, but the moment that there is some derangement in any individual, his self-preservative power is impaired. Everybody understands, of course, that if one becomes deaf, has his eyesight weakened, or his limbs injured, the chances for his continued existence are lessened. But this is also true, and perhaps moreso, of certain defects in the brain which deprive the automaton, more or less, of that vital quality and cause it to rush into destruction. A very sensitive and observant being, with his highly developed mechanism all intact, and acting with precision in obedience to the changing conditions of the environment, is endowed with a transcending mechanical sense, enabling him to evade perils too subtle to be directly perceived. When he comes in contact with others whose controlling organs are radically faulty, that sense asserts itself and he feels the 'cosmic' pain. The truth of this has been borne out in hundreds of instances and I am inviting other students of nature to devote attention to this subject, believing that through combined and systematic effort results of incalculable value to the world will be attained.

Dr. Tesla's First Telautomaton.

The idea of constructing an automaton, to bear out my theory, presented itself to me early but I did not begin active work until 1893, when I started my wireless investigations. During the succeeding two or three years a number of automatic mechanisms,

to be actuated at distance, were constructed by me and exhibited to
visitors in my laboratory. In 1896, however, I designed a complete
machine capable of a multitude of operations, but the consummation
of my labors was delayed until late in 1897. This machine was
illustrated and described in my article in the Century Magazine
of June, 1900, and other periodicals of that time and, when first
shown in the beginning of 1898, it created a sensation such as
no other invention of mine has ever produced. In November, 1898,
a basic patent on the novel art was granted to me, but only after
the Examiner-in-Chief had come to New York and witnessed the per-
formance, for what I claimed seemed unbelievable. I remember that
when later I called on an official in Washington, with a view of
offering the invention to the Government, he burst out in laughter
upon my telling him what I had accomplished. Nobody thought then
that there was the faintest prospect of perfecting such a device.
It is unfortunate that in this patent, following the advice of my
attorneys, I indicated the control as being effected through the
medium of a single circuit and a well-known form of detector, for
the reason that I had not yet secured protection on my methods and
apparatus for individualization. As a matter of fact, my boats
were controlled through the joint action of several circuits and
interference of every kind was excluded. Most generally I employed
receiving circuits in the form of loops, including condensers,
because the discharges of my high tension transmitter ionized the
air in the hall so that even a very small aerial would draw elec-
tricity from the surrounding atmosphere for hours. Just to give
an idea, I found, for instance, that a bulb 12" in diameter, highly

exhausted, and with one single terminal to which a short wire was attached, would deliver well on to one thousand successive touches before all charge of the air in the laboratory was neutralized. The loop form of receiver was not sensitive to such a disturbance and it is curious to note that it is becoming popular at this late date. In reality it collects much less energy than the aeriels or a long grounded wire, but it so happens that it does away with a number of defects inherent to the present wireless devices. In demonstrating my invention before audiences, the visitors were requested to ask any questions, however involved, and the automaton would answer them by signs. This was considered magic at that time but was extremely simple, for it was myself who gave the replies by means of the device.

At the same period another larger telautomatic boat was constructed, a photograph of which is shown in this number of the Electrical Experimenter. It was controlled by loops having several turns placed in the hull, which was made entirely water-tight and capable of submergence. The apparatus was similar to that used in the first with the exception of certain special features I introduced as, for example, incandescent lamps which afforded a visible evidence of the proper functioning of the machine and served for other purposes.

TELAUTOMATICS of the FUTURE.

These automata, controlled within the range of vision of the operator, were, however, the first and rather crude steps in the evolution of the Art of Telautomatics as I had conceived it. The next logical improvement was its application to automatic mechanisms beyond the limits of vision and at great distance from the

center of control, and I have ever since advocated their employment as instruments of warfare in preference to guns. The importance of this now seems to be recognized, if I am to judge from casual announcements through the press of achievements which are said to be extraordinary but contain no merit of novelty whatever. In an imperfect manner it is practicable, with the existing wireless plants, to launch an aeroplane, have it follow a certain approximate course, and perform some operation at a distance of many hundreds of miles. A machine of this kind can also be mechanically controlled in several ways and I have no doubt that it may prove of some usefulness in war. But there are, to my best knowledge, no instrumentalities in existence today with which such an object could be accomplished in a precise manner. I have devoted years of study to this matter and have evolved means, making such and greater wonders easily realizable. As stated on a previous occasion, when I was a student at college I conceived a flying machine quite unlike the present ones. The underlying principle was sound but could not be carried into practice for want of a prime-mover of sufficiently great activity. In recent years I have successfully solved this problem and am now planning aerial machines devoid of sustaining planes, ailerons, propellers and other external attachments, which will be capable of immense speeds and are very likely to furnish powerful arguments for peace in the near future. Such a machine, sustained and propelled entirely by reaction, is shown on one of the pages and is supposed to be controlled either

mechanically or by wireless energy. By installing proper plants it will be practicable to project a missile of this kind into the air and drop it almost on the very spot designated which may be thousands of miles away. But we are not going to stop at this. Telsautomata will be ultimately produced, capable of acting as if possessed of their own intelligence and their advent will create a revolution. As early as 1898 I proposed to representatives of a large manufacturing concern the construction and public exhibition of an automobile carriage which, left to itself, would perform a great variety of operations involving something akin to judgment. But my proposal was deemed chimerical at that time and nothing came from it.

At present many of the ablest minds are trying to devise expedients for preventing a repetition of the awful conflict which is only theoretically ended and the duration and main issues of which I have ^{correctly} predicted in an article printed in the Sun of December 20, 1914. The proposed League is not a remedy but, on the contrary, in the opinion of a number of competent men, may bring about results just the opposite. It is particularly regrettable that a punitive policy was adopted in framing the terms of peace, ^{because} a few years hence it will be possible for nations to fight without armies, ships or guns, by weapons far more terrible, to the destructive action and range of which there is virtually no limit. Any city, at a distance whatsoever, from the enemy, can be destroyed by him and no power on earth can stop him from doing so. If we want to avert an

impending calamity and a state of things which may transform this globe into an inferno, we should push the development of flying machines and wireless transmission of energy without an instant's delay and with all the power and resources of the nation.

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of the

TESLA MACHINE COMPANY.

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ARTICLE I.

MEETING OF STOCKHOLDERS.

Sec. 1: The annual meeting of the stockholders of this Company shall be held at the office of the Corporation on the third Thursday in January of each and every year at 4 P.M. for the election of directors and such other business as may properly come before the meeting. Notice of the time, place and object of such meeting shall be given by publication thereof at least once in each week for two successive weeks immediately preceeding such meeting in the manner required by the Stock Corporation Law and by mailing at least six days previous to such meeting, postage prepaid, a copy of such notice, addressed to each stockholder at his P.O. address as same shall appear on the books of the Company. No business other than that stated in such notice shall be transacted at such meeting without the unanimous consent of all stockholders present thereat in person or by proxy.

Sec. 2: Special meetings of the stockholders other than those regulated by statute may be called at any time by a major-

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Sec. 1: The annual meeting of the stockholders of this Company shall be held at the office of the Corporation on the third Thursday in January of each and every year at 4 P.M. for the election of directors and such other business as may properly come before the meeting. Notice of the time, place and object of such meeting shall be given by publication thereof at least once in each week for two successive weeks immediately preceeding such meeting in the manner required by the Stock Corporation Law and by mailing at least six days previous to such meeting, postage prepaid, a copy of such notice, addressed to each stockholder at his P.O. address as same shall appear on the books of the Company. No business other than that stated in such notice shall be transacted at such meeting without the unanimous consent of all stockholders present thereat in person or by proxy.

Sec. 2: Special meetings of the stockholders other than those regulated by statute may be called at any time by a major-

ity of the Corporation. It shall also be the duty of the President to call such meeting when requested so to do by one director or other stockholder, or when requested in writing so to do by stockholders owning one-third of the capital stock. Notice of every special meeting, stating the time, place and object thereof, shall be given by mailing, postage prepaid, at least six days before such meeting, a copy of such notice addressed to each stockholder at his post office address as the same appears on the books of the Company.

Sec. 3: At all meetings of stockholders, there shall be present either in person or by proxy stockholders owning at least three-fifths of the capital stock of the Corporation in order to constitute a quorum except at special elections of directors pursuant to the General Corporation Law.

Sec. 4: At all annual meetings of stockholders the right of any stockholder to vote shall be governed and determined as prescribed in the General Corporation Law.

Sec. 5: If for any reason the annual meeting of the stockholders shall not be held as hereinbefore provided, such annual meeting shall be called and conducted as prescribed in the General Corporation Law.

Sec. 6: At all meetings of the stockholders only such persons shall be entitled to vote in person and by proxy who appear as stockholders on the transfer books of the Company for ten days immediately preceeding such meeting.

Sec. 7: At the annual meeting of stockholders the follow-

ing shall be the order of business, viz:

1. Calling the roll.
2. Proof of proper notice of meeting.
3. Report of President.
4. Report of Secretary.
5. Report of Treasurer.
6. Report of Committees.
7. Election of Directors and inspectors of election.
8. Miscellaneous business.

Sec. 8: At all meetings of stockholders all questions, except the adoption of an amendment to the By-Laws and the election of Directors and inspectors of election, and all such other questions, the manner of deciding which is specially regulated by statute, shall be determined by a majority vote of the stockholders present in person or by proxy; provided, however, that any qualified voter may demand a stock vote and in that case, such stock vote shall be taken immediately, and each stockholder present in person or by proxy shall be entitled to one vote for each share of stock owned by him. All voting shall be 'viva voce', except that a stock vote shall be by ballot, each of which shall state the name of the stockholder voting and the number of shares owned by him, and in addition, if such ballot be cast by a proxy, it shall also state the name of such proxy.

Sec. 9: At special meetings of stockholders the provisions of the General Corporation Law shall apply to the casting of all votes.

ARTICLE II.

DIRECTORS.

Sec. 1: The Directors of this Corporation shall be elected by ballot for the term of one year at the annual meeting of the stockholders, except as hereinafter otherwise provided for

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... shall be filled for the unexpired term by a majority vote of the remaining directors at any special meeting called for that purpose or at any regular meeting of the Board.

Sec. 8: In the event the entire Board of directors shall die or resign, any stockholder may call a meeting in the same manner that the president may call such meeting, and Directors of the unexpired term may be elected at such special meeting in the manner provided for their election at annual meetings.

Sec. 4: The Board of Directors may adopt such rules for the regulation of their meetings and management of the affairs of the Corporation as they may deem proper, not inconsistent with the Laws of the State of New York or their by-laws.

Sec. 5: The Board of Directors shall meet at such regular times as they may fix and whenever called together by the President upon due notice given to each Director. On the written request of any Director, the Secretary shall call a special meeting of the Board.

Sec. 6: All Committees shall be appointed by the Board of Directors.

ARTICLE III.

OFFICERS.

Sec. 1: The Board of Directors immediately after the annual meeting shall choose one of their number by a majority vote

to be President of the Company and they shall also elect a Vice President, a Treasurer, and a Secretary, and may also appoint other officers as they may deem necessary. The elected Officers shall serve for one year or until the next annual election. The appointed Officers shall serve during the pleasure of the Board. The Board of Directors shall fix the salaries, if any, that shall be paid to the several Officers of the Company.

Sec. 2: The President shall preside at all meetings of the Board of Directors and shall act as temporary chairman at and call to order all meetings of the stockholders. He shall sign certificates of stock, sign and execute all contracts in the name of the Company when authorized so to do by the Board of Directors, appoint and discharge agents and employees subject to the approval of the Board of Directors, and he shall have the general management of the affairs of the Corporation and perform all the duties incidental to his office. At the annual meeting he shall present a written report to the stockholders, setting forth in full the condition of the Company. He shall countersign all notes or other evidences of indebtedness authorized by the Board of Directors.

Sec. 3: The Vice President shall in the absence or incapacity of the President perform the duties of that office.

Sec. 4: The Treasurer shall have the care and custody of all the funds and securities of the Corporation and deposit the same in the name of the Corporation in such banks as the Directors may elect. He shall sign certificates of stock and all checks, drafts, notes, and orders for the payment of money,

Sec. 1: The Secretary of the Company shall be authorized by the President or Board of Directors. He shall keep and have charge of the books of the Company, and at all reasonable times shall render accounts to any Director or stockholder. He shall keep an office at the office of the Company during business hours. He shall affix the seal of the Company to all certificates of stock and all other instruments requiring same when so directed by the Board of Directors.

Sec. 2: The Secretary shall keep the minutes of the Board of Directors and also the minutes of the meeting of the stockholders; he shall attend to the giving and serving of all notices of the Company; he shall have charge of such books and papers as the Board may direct; he shall attend to such correspondence as may be assigned to him; and perform all the duties incidental to his office.

ARTICLE IV.

CAPITAL STOCK.

Sec. 1: Subscriptions to the capital stock must be paid to the Treasurer at such time or times and in such installments as the Board of Directors may by resolution require. Any failure to pay an installment when required to be paid by the Board of Directors shall work a forfeiture of such shares of stock in arrears, pursuant to the Stock Corporation Law.

Sec. 2: Certificates of stock shall be numbered and registered in the order in which they are issued and shall be signed by the President or Vice President and by the Treasurer or Secretary, and the seal of the Corporation shall be affixed

... shall be bound in a book and shall be in consecutive order therefrom and in the margin thereof shall be entered the name of the person owning the shares therein represented, the number of shares and the date thereof. All certificates exchanged or returned to the Corporation shall be marked & recalled with the date of cancellation by the Treasurer and shall be immediately posted in the certificate book opposite the memorandum of its issue.

Sec. 3: Transfers of stock shall only be made on the books of the Company by the holder in person or by power of attorney duly executed and acknowledged and filed with the Treasurer of the Corporation and on surrender of the certificate or certificates of such shares.

Sec. 4: Whenever the capital stock of the Company is increased, each bona fide owner of its stock shall be entitled to purchase, at the par value thereof, an amount of stock in proportion to the number of shares of stock he owns in the corporation at the time of such increase.

ARTICLE V.

DIVIDENDS.

Sec. 1: Dividends shall be declared and paid out of the surplus profits of the Corporation as often and at such times as the Board of Directors may determine.

ARTICLE VI.

INSPECTORS.

Sec. 1: Two inspectors of election shall be elected at each annual meeting of the stockholders to serve for one year.

and if any inspector shall refuse to serve or shall not be present, the meeting may appoint an inspector in his place.

ARTICLE VII.

SEAL.

Sec. 1: The Seal of the Corporation shall be in the form of a circle and shall bear the name of the Corporation and the year of its incorporation.

ARTICLE VIII.

AMENDMENTS.

Sec. 1: These by-laws may be amended at any stockholders meeting by a vote of the stockholders owning a majority of the stock, represented either in person or by proxy, provided the proposed amendment is inserted in the notice of such meeting; they may also be amended at any meeting of the Board of Directors by a three-fifths vote of the Directors.

15

TESLA'S NEW SYSTEM OF FLUID PROPULSION

In subduing the forces of Nature to
his service man must invariably avail himself of
some process in which a fluid acts as carrier of
energy, this being an essential step in any indus-
trial undertaking dependent on mechanical power.
Evidently then, a discovery or radical departure
in that domain must be of extreme importance and
far-reaching influence on the existing conditions
and phases of modern life.

Fluid propulsion is now effected by
means of pistons, vanes or blades, which entail
complexity of construction and impose many limi-

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tations on the propelling as well as propelled mechanism and its performance. Tesla has experimented with these devices and produced machines of extraordinary simplicity which, moreover, are in many other respects superior to the old types universally employed. A few words will be sufficient to convey a clear idea of his invention.

Every fluid, as water or air, possesses two salient properties: adhesion and viscosity. Owing to the first it is attracted and clings to a metallic surface; by virtue of the second it resists the separation of its own particles. As an inevitable consequence a cor-

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tain amount of fluid is dragged along by a body propelled through it; conversely, if a body be placed in a fluid in motion it is impelled in the direction of movement. The practical forms of Tesla's apparatus consist of flat, circular disks, with central openings, mounted on a shaft and enclosed in a casing provided with ports at the peripheral and central portions. When deriving energy from any kind of fluid it is admitted at the periphery and escapes at the centre; when, on the contrary, the fluid is to be energized, it enters in the centre and is expelled at the periphery. In either case it traverses the in-

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torstices between the disks in a spiral path,
power being derived from, or imparted to it,
by purely molecular action. In this novel man-
ner the heat energy of steam or explosive mix-
tures can be transformed with high economy in-
to mechanical effort; motion transmitted from
one shaft to another without solid connection;
vessels may be propelled with great speed; wat-
er raised or air compressed; an almost perfect
vacuum can be attained, substances frozen and
gases liquefied.

While this improvement has the
breadth and applicability of a fundamental
mechanical concept, the widest field for its

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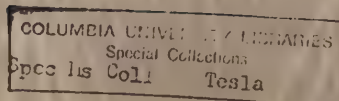
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commercial exploitation is, obviously, the thermodynamic conversion of energy.

The commercial value of a prime-mover is determined by its efficiency, specific performance relative to weight and space occupied, cheapness of manufacture, safety and reliability of operation, adaptability to construction in large units, capability of running at high peripheral velocity, reversibility, and a number of other features of lesser importance. In the majority of these a machine, operating on the new principle, excels. But there is one quality which is most desirable in a thermo-dynamic transformer from the

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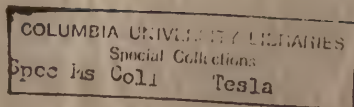
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economic point of view, and that is great resistance to deterioration and impairment of efficiency by heat.

The employment of high temperature is of such vital bearing on the efficiency of prime-movers that it is of paramount importance to extend the thermal range as far as practicable. In the present state of the art radical progress towards more economical transformation of the energy of fuel can only be achieved in that direction. Such being the case, the capability of the machine to withstand deteriorating effects of great heat is the controlling factor in determining its commercial value. In that most desired quality the

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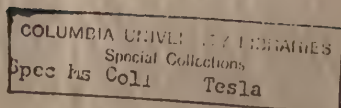
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Tesla turbine surpasses all the older types of heat motors. The Diesel and other internal combustion engines are fatally limited in this respect by their complete dependence on closely fitting sliding joints and unfailing supply of clean lubricant; while in the present forms of turbines buckets, blades and inherent mechanical deficiencies impose similar restrictions. These parts are too delicate and perishable to serve as elements of a gas turbine and this has been the main obstacle in the way of its successful realization. The rotor of the Tesla turbine presents a relatively enormous

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active area and the wear is quite insignificant as the fluid, instead of striking against the propelling organs in the usual destructive manner, flows parallel with the same, imparting its momentum by adhesion and viscosity instead of impact. Moreover, it has been shown that the efficiency of this form of rotor is not impaired to any appreciable degree by a roughening of the disks and that it operates satisfactorily even if the working medium is corrosive to an extent.

The universal adoption of steam as motive power under certain standard conditions, settled upon in the course of time, gradually forced upon the minds of engineers the Rankine

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Cycle Efficiency as criterion of performance and long continued endeavors to improve the same have finally resulted in complex multistage constructions entirely unsuitable for high temperatures. The Tesla turbine, by virtue of its exceptional heat-resisting and other unique properties, makes possible the attainment of great fuel economy with but a single stage, incidentally offering the additional advantages of an extremely simple, small, compact, and reliable mechanism. But perhaps the chief commercial value of this new prime-mover will be found in the fact that it can be operated with the cheapest grade of crude oil, colloidal fuel, or powdered coal, containing con-

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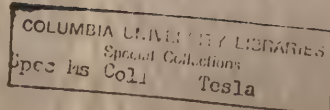
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siderable quantities of grit, sulphur and other impurities, thus enabling vast sums of money to be saved annually in the production of power from fuel.

The Tesla turbine also lends itself to use in conjunction with other types, especially with the Parsons with which it forms an ideal combination. Although its practical introduction has been delayed by the force of circumstances, a number of years have been spent in exhaustive investigations and experiments on the basis of which the performance in any given case can be closely calculated. The first public tests were made before the

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outbreak of the war at the Waterside Station of the New York Edison Company where several machines, ranging from 100 to 5000 h.p., were installed and operated with satisfactory results. That the invention was appreciated by the technical profession may be seen from the excerpts of statements by experts and periodicals printed on the annexed page.

The salient advantages of the Tesla turbine may be summed up as follows:

EFFICIENCY: The most economical of the present prime-movers is the Diesel engine.

But, quite apart of many practical and com-

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mercial drawbacks, inseparable from this type,
it is entirely dependent on comparatively ex-
pensive oil, so that the Tesla Gas Turbine,
working with much cheaper fuel, would have
the better in competition even if its effi-
ciency as a thermodynamic transformer were
appreciably lower, all the more so in view
of its greater mechanical perfection.

Referring to turbines, all of
which are surpassed by the Parsons in econ-
omy as well as extent of use, definite lim-
its have already been reached and the only
possibilities of saving fuel exist in the
employment of steam at very high superheat

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and utilization of gas or oil as motive fuel.

But none of the primemovers mentioned is adapted for such operation and although every effort has been made in this direction, no signal success has been achieved. The superheat is at most 250° F. this being considered the maximum permissible. All attempts to considerably extend the thermal range have failed chiefly because of the inability of bucket structures to withstand the action of intense heat. The Tesla Turbine can operate quite satisfactorily with the motive agent at very high temperature and, owing to this quality,

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lens itself exceedingly well to these purposes.

SPECIFIC PERFORMANCE: In this particular it is

superior to all other forms. Each disk is vir-

tually the equivalent of a whole bucket wheel,

and as many of them take up but a small width

the output of the machine, considering its

weight and size, is surprisingly great. This,

while not being a measure of efficiency, is

nevertheless a feature of considerable import-

ance in many instances.

CHEAPNESS OF MANUFACTURE: The new turbine

can be produced without a single machined part

except the shaft, all the disks being punched

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and the casings pressed. By this method, with proper machinery installed on a large scale, the cost of production may be reduced to a figure never deemed possible in the construction of an engine. What is more, this can be done without material sacrifice of efficiency as small clearances are not essentially required.

SAFETY AND RELIABILITY OF OPERATION: There is an ever present danger in the running of high speed machines. A bucket turbine may at any moment run away and wreck the plant. Such accidents have happened again and again and this

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peril has often proved a deterrent to investment.

A remarkable quality of this turbine is its complete safety. As regards the wear and tear of the propelling organs it is significant and, in any event, of no consequence on the performance.

ADAPTABILITY TO CONSTRUCTION IN LARGE UNITS: In

all the present machines there is a distinct limit to capacity, for although large units can be manufactured, they are very costly and difficult to manage. The new turbine is so simple and the output so large that the limits in this direction can be greatly extended.

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RESISTANCE TO DETRIORATION BY HEAT AND OTHER

AGENTS:

In this feature again it has an overwhelming advantage over the old types in which the maintenance of smooth surfaces and sharp edges is indispensable to efficient working. In the Tesla Turbine, for the reasons already stated, the destructive actions of heat and corrosive agents are much less pronounced and of relatively negligible effect. This fact has a most important bearing on the saving of fuel.

CAPABILITY OF RUNNING AT HIGH PERIPHERAL SPEED:

In this respect also it is superior to others. The rotating structure carries no load and is

excellently adapted to withstand tensile stresses. Judging from the most recent turbine practice this quality should be of special value.

REVERSIBILITY: The present turbines are greatly handicapped by their incapability of reversal which is a very serious defect in certain applications, as the propulsion of vessels, necessitating the employment of auxiliary turbines which detracts from the propulsive power and adds materially to the cost of production and maintenance of the equipment. The Tesla Turbine has the unique

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property of being reversible; not only this but it operates with the same efficiency in either direction. For marine purposes it therefore constitutes an ideal motor whether used alone or in conjunction with older types.

Besides the above it possesses other desirable features, constructive and operative, which will add to its value and adaptability to many industrial and commercial uses, such as, railroading, marine navigation, aerial propulsion, generation of electricity, refrigeration, operation of trucks and automobiles, hydraulic gearing, agriculture, irrigation, mining and similar purposes.

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EXPRESSIONS OF OPINION ON THE TESLA TURBINE

- C. B. Richards, Professor Emeritus of Mechanical Engineering, Yale University: "I am amazed at the development of power given by the turbine and stunned by the exhibit."
- F. Sargent, Chief Engineer and Turbine Expert: "I am impressed with the newness and novelty of the underlying principle of this invention. It is such as will claim the attention and admiration of anyone of a scientific turn of mind in a mechanical direction."
- Reynold Janney, Chief Engineer, Universal Transmission Co: "It is a great invention."
- Brigadier Allen of the War Department: "Something new in the world. Officers are greatly impressed with it."
- Miller Reese Hutchinson, Chief Engineer: "It is the greatest invention of the age."
- Arnold Trinyi, Chief Engineer, Gelfeunungs-Gesellschaft, Germany: "The ideal of the turbine engine."
- B. R. T. Collins (Power Plant Economist): "It is a wonderful turbine."
- The Motor World: "The new principle unquestionably is a great contribution to science and engineering, great in its simplicity and breadth of application."
- Scientific American: "Considered from the mechanical standpoint, the turbine is astonishingly simple and economical in construction, should prove to possess such a durability and freedom from wear and breakdown as to place it, in these respects, far in advance of any type of steam or gas motor of the present day."
- Engineering Magazine: "An entirely new form of prime mover with interesting possibilities."
- Technical World Magazine: "The Tesla turbine is the apotheosis of simplicity. It is so violently opposed to all precedent that it seems unbelievable."

From Numerous Articles and Comments:

"The turbine is different in principle to any heretofore in use and one which will take less room and less coal than the best engine now running".....
"Turbine of revolutionary design".... "Improvement in dynamics which promises revolutionary results"..
"Results seem revolutionary to the point of staggering the imagination".... "This motor will revolutionize the turbine industry".... "Wonderful motor. Extraordinary mechanical principle".... etc. etc.

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CORPORATION BUREAU

STATE OF NEW YORK

Office of the Secretary of State

Albany, August 9, 1916

Geo. Schereff, Esq.,

Secy., Nikola Tesla Co.,
8 West 40th St., N. Y. City.

Dear Sir:

Enclosed herewith please find check for
\$ 1.25, the amount of overpayment of fees in
relation to the certificate of incorporation
of Tesla Company, Inc.

Yours respectfully,

A handwritten signature in cursive script, likely of Francis B. Knickerbocker, the Secretary of State at the time.

Secretary of State

J. Georg Scherff,

Drechsler und Eggenmacher.

Nordseebad A. 1902

Sehr geliebte Person

[illegible]

J. Georg Scherff,
Turner (lathe) and Harrowmaker

North Sea Spa (Resort)
Ulenbruch
17 Sept 1902

Dearly loved children,

We received your dear letter, but it was all torn open on two sides and reglued here at the post office. It had arrived here with the address damaged. No doubt the mail carriers assumed there was a thousand mark bill in it because it was so thick. We read your letter as well as the newspaper clipping with interest and were amazed at your great enterprise. May it only come about that Mr. Tesla be successful in achieving his acceptance (joining). Then it certainly will not be to your disadvantage. We are happy, dear children, that you feel content there in spite of your isolation, and that you are all healthy. We'd like to see all of you some time, but no doubt that will just remain a wish.

Columbia University in the City of New York | New York, N. Y. 10027

THE LIBRARIES

Butler Library

801 Butler Library
April 17, 1979

Mr. Leland Anderson
2525 South Meade Street
Denver, Co. 80219

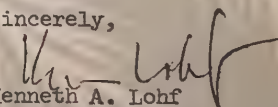
Dear Mr. Anderson:

In reply to your letter of 11 April, we have corrected our catalog cards for the Kiebitz item and checked the photocopies of your other enclosures against our collection. We have found that we don't have enclosures 2 and 4.

We do have enclosures 3 and 5 with one exception: the motor diagram supposed to have been attached to the 29 March 1918 letter to the Wisconsin Electric Company is not present. We have no idea where the lacking items you inquired about are and have no record as to ever receiving them.

All best wishes for the success of your work.

Sincerely,


Kenneth A. Lohf
Librarian for Rare Books
and Manuscripts

6/13/78

*Not cataloged in
Columbia University
April 1979*

- 1) H. Y. SECRETARY OF STATE AUG. 9, 1912
- 2) J. GEORGE SCHERR 17 SEPT. 1902

April 11, 1979

Mr. Kenneth A. Wolf,
Librarian for Rare Books and Mss.
801 Butler Library
Columbia University in the City of New York
New York, NY 10027

Dear Kenneth:

Nikola Tesla Collection (Scherff Group)

With this letter I hope to provide some information to you and receive information from you that will, taken together, clear up some possible identification problems in the subject collection. As you are probably aware, I am serving as an adviser for a major biographical work on Tesla which is now in progress. It is desirable to cite the source for information that is used or quoted, and hopefully some uncertainties with regard to a few items in the Tesla-Scherff papers can be cleared up.

The following comments and questions are based on the contents of your catalog as of June 1976:

Enclosure 1 relates to the following catalog entry:

Tesla, Nikola
Kiebitz, Franz
For Accompaniment
Berlin-Steiglitz, 4 Mar. 1932
t.ms., 4 p. (Forward (?) to S. Boksan's
book on Nikola Tesla; p. 4 entitled:
Preface). *(Note: an English translation.)*

The enclosure includes a copy of the material covered by the catalog entry plus a copy of the front matter of the book in which the material appeared. Inasmuch as Boksan wrote several books about Tesla, it was my thought that you may want to more precisely identify the book in question.

The remaining four enclosures pertain to materials that I am not certain are in the Tesla-Scherff papers at the Library. They should be, inasmuch as I obtained the enclosure copies while the papers were in the hands of Marianna Garner -- the provenance antecedent.

Enclosure 2 is a copy of the first page (I don't have the remainder) of a letter to George Scherff from some family member in Germany. Note that Tesla is mentioned. Little is known about George Scherff, and this letter is important from the standpoint of helping to provide such information. Also, the substance of the letter could be important insofar as information concerning Tesla's business affairs. Is this in the Library's collection? (If so, I would like to have a complete copy.)

Enclosure 3 is a copy of a letter to George Scherff from Fritz Lowenstein. Note that Tesla is mentioned. This letter is important because of the fact that Lowenstein was Tesla's assistant at Colorado Springs in 1899 where Tesla performed experiments that startled the scientific world, and also worked for Tesla again at his laboratory in Shoreham when he (Lowenstein) returned from Germany. Lowenstein is a controversial figure in Tesla's biography because he (Lowenstein) had agreed to testify in support of the Tesla radio patents in an important case during WWI, but at the last minute switched to support the Marconi radio patents -- raising many unanswered questions about his integrity and provoking the wrath of Tesla's scorn. Is this item in the Library's collection?

Enclosure 4 is a copy of a note to George Scherff from the Office of the Secretary of State of New York. The Library's catalog describes several several stock certificates, incorporation statements, etc., each cited individually, but this item is not included. Is the item, in fact, in the Library's collection?

Enclosure 5 described a correspondence group (11 items) between George Scherff and the Wisconsin Electric Company. The story behind this group is that Tesla used Scherff to write as himself (to conceal his direct involvement) in order to obtain a special motor of his design. This situation becomes apparent as one reads the correspondence and various marginal notes -- the motor diagram (attached to March 29, 1918, letter) is in Tesla's hand. Is this correspondence group in the Library's collection?

If some (or none) of the items described by Enclosures 2 through 5 are in the Library's collection, do you know where they may be? Were they turned back to Mary Benjamin as nonrelevant, for example?

I will be most pleased to receive your comments.

Sincerely,

Leland Anderson

Leland Anderson
2525 South Meade Street
Denver, CO 80219

It may interest Braco to know that there are some plans and negotiations under way to make a film on Tesla. I understand Hollywood is negotiating with the heirs of John O'Neill for the rights on his book. Seems it will be Todd's ou -- the guy that is -- the guy that spoke on the phone to a young lady in -- the papers. Some months ago I Braco a letter asking about rights to make a film of Tesla. I remember I forwarded the letter to him in --

DRAGO RUBIN

TESLA

OTKRICE U BUDIMPESTI — POTESKOCE U STRASSBURGU —
KOD EDISONA — NOĆ KUŠNJE I SLAVE — SJENE U LOVO-
RIKAMA — U RODITELJSKOM DOMU — VECERA U HOTELU
ASTORIJA — NA VISORAVNI COLORADA — U KULI NA LONG
ISLANDU — POSJET FRAKOVA — POZDRAV DOMOVINI

FRITZ LÖWENSTEIN

INGENIEUR.

FRANKFURT A. M. DEN. 13. 1. 1902.

Kronprinzenstrasse 35.

Sehr geehrter Herr Scherff !

Heute zurückgekehrt von der Jagd nach Herrn Director Singer beile ich mich Ihnen mitzutheilen, dass ich von demselben die Zustimmung zur vorzeitigen Lösung meines Contractes erhielt. Wir sind nun fest darüber, einen Nachfolger für meinen Posten zu bekommen und hoffe ich, dass derselbe im Laufe der nächsten Woche wird eintreffen können. Die Geschäftsübergabe werde ich dann sehr beschleunigen, kann jedoch den Zeitpunkt meiner Abreise heute noch nicht fixieren. Jedesfalls aber bin ich vor Ende Februar bei Ihnen, worauf ich mich schon sehr freue.

Die Sendung von 250 Dollar, die ich hienit bestätige und für welche ich Herrn Tesla meinen besten Dank sagen lasse, dürfte bereits mehrere Tage hier am Postamt meiner geharrt haben.

Ich bitte Sie Herrn Tesla meine höflichste Empfehlung bestellen zu wollen.

Mit vielen Grüßen und dem Zuruf "Auf ein recht arbeitsfreudiges Wiedersehen" Ihr

Fritz Löwenstein

LOUIS H. HAMILTON
PRESIDENT & GEN. MGR.

CHESTER H. BEACH
VICE PRESIDENT

ARTHUR HUGUNIN
SECY & TREAS.

WISCONSIN ELECTRIC COMPANY

INCORPORATED

ELECTRICAL **DUMORE** SPECIALTIES

CABLE ADDRESS
"DUMORE RACINE"

RACINE, WISCONSIN

July 30th, 1918.



Mr. George Scherff,
17 Battery Place,
New York City, N.Y.

Dear Sir:-

We forwarded to you yesterday your Motor wound as you requested. It went forward C.O.D. for the reason that we have no means of knowing who you are and what credit you are entitled to. We hope that our action will meet with your approval, and that you can establish with us sufficient evidence for credit.

We hope that the Motor will meet your requirements, and after you have examined it, if there are any further corrections to make on it, if you will return it to us, we will be glad to go into the matter with you further.

At the present time we are busily engaged in Government work and are not giving much attention to this kind of work. However, if you will be patient, we assure you that we will give it our spare time and are most willing to help you.

The price we have quoted you is list for this type of motor, and should orders for quantities be placed, we can quote you more attractively.

Thanking you, we remain

Very truly yours,

WISCONSIN ELECTRIC CO.

PER

R. L. Case

RIP:P

MANUFACTURERS
OF

PORTABLE GRINDERS

SEWING MACHINE
MOTORS

FRACTIONAL
H. P. MOTORS

POLISHERS AND
BUFFERS

ELECTRIC DRILLS

CLOTH CUTTERS

VACUUM CLEANERS

BILLIARD TABLE
CLEANERS

CLOTHES CLEANERS

ERASER CLEANERS

BLOWERS

HAIR DRYERS

SHOE DRYERS

DRINK MIXERS

LOUIS H. HAMILTON
PRESIDENT & GEN. MGR.

CHESTNUT ST. PHILA.

ARTHUR HUGENIH
SECR. & TREAS.



WISCONSIN ELECTRIC COMPANY

INCORPORATED

ELECTRICAL DUMORE SPECIALTIES

RACINE WISCONSIN

June 24th, 1918.

MANUFACTURERS
OF

PORTABLE GRINDERS

SEWING MACHINE
MOTORS

FRACTIONAL
H. P. MOTORS

POLISHERS AND
BUFFERS

ELECTRIC DRILLS

CLOTH CUTTERS

VACUUM CLEANERS

BILLIARD TABLE
CLEANERS

CLOTHES CLEANERS

ERASER CLEANERS

BLOWERS

HAIR DRYERS

SHOE DRYERS

DRINK MIXERS

Mr. Geo. Scherff,
17 Batter Place,
New York City, N.

Dear Sir:-

Your letter of the 18th inst.,
is at hand, regarding the building of a
special motor for you.

We have given the information
enclosed in your letter to our Engineers,
who says this enlightens the proposition
considerably, and they may be able to build
a motor that will meet with your requirements.

When anything further develops,
we will notify you to that effect.

Very truly yours,

WISCONSIN ELECTRIC CO.

RIP:P

PER

R. H. Case

June 18, 1918.

Wisconsin Electric Company,

Racine, Wisconsin.

Gentlemen:-

I beg to acknowledge receipt of your favor of June 7th, and note that your engineers find it impossible to build a motor with the amperage I specified. In this regard I would say, that it will be immaterial what amperage the motor consumes, the only requirement is that the motor should not overheat under the conditions that it will be used. From my former descriptions you will see that the motor will be at rest most of the time and will operate only occasionally when the arc carbons need feeding. I am not interested in the efficiency of the machine and the power required will be very small.

I have no doubt that your engineers will be able to meet these conditions and hope to hear further from you soon.

Yours very truly,

LOUIS H. HAMILTON
PRESIDENT & GEN. MGR.

CHESTER H. BEACH
VICE PRESIDENT

ARTHUR HUGUNIN
SECY & TREAS.

WISCONSIN ELECTRIC COMPANY

INCORPORATED

ELECTRICAL **DUMORE** SPECIALTIES

CABLE ADDRESS
"DUMORE RACINE"

RACINE, WISCONSIN

June 7th, 1918.



MANUFACTURERS
OF

PORTABLE GRINDERS

SEWING MACHINE
MOTORS

FRACTIONAL
H. P. MOTORS

POLISHERS AND
BUFFERS

ELECTRIC DRILLS

CLOTH CUTTERS

VACUUM CLEANERS

BILLIARD TABLE
CLEANERS

CLOTHES CLEANERS

ERASER CLEANERS

BLOWERS

HAIR DRYERS

SHOE DRYERS

DRINK MIXERS

Mr. Geo. Scherff,
17 Battery Pl.
New York City

Dear Sir:-

We received your letter of June 3rd referring to a special motor that we contemplated building for you. The writer has taken this to the engineers for the third time. They will make another attempt to make this motor. They state, however, that it is an impossibility to build a motor to the amperes you require. Could you make any better suggestions of this part of the work? If you have any good points in building this motor, we would like to have you give them to us. It would perhaps greatly help us in our further experiments.

Our shop is also crowded with a good many Government orders, and are not free to devote much of our time to special work. We will, however, give this order our consideration at a very early period.

Very truly yours,

WISCONSIN ELECTRIC CO.

PER

RIP:P

*Not in the order in efficiency and losses
of machine. It is much better as best most
of time. We will make motor that will not
overheat under these conditions.*

WISCONSIN ELECTRIC COMPANY

Racine, Wis. June 7, 1918.

Mr. Geo. Scherff,
17 Battery Plc., N.Y.C.

Dear Sir:

We have your letter of June 3rd, referring to the special motor that we contemplated building for you. The writer has taken this up with the Engineers for the third time, and will advise that they will make another effort to make this motor. They state, however, that it is an impossibility to build a motor with the ampere you require. Could you make any better suggestions of this part of the winding? If you have any good points in building this motor, we would like to have you give them to us. It would perhaps greatly help us in our further experiments.

Our shop is also crowded with a good many Government orders, and we are not free to devote much of our time to special work. We will, however, give this order our consideration at a very early period.

Very truly yours,

Wisconsin Electric Co.

(Signed) By R. I. Pease

Dear George:

Please call me up
to-night about this -

Respectfully

Pa

June 3, 1918.

Wisconsin Electric Company,

Racine, Wisconsin.

Gentlemen:-

I beg to acknowledge receipt of your favor of May 28th, and note your remark, that the special motor wound according to my specifications would not develop sufficient power to be of any service. I do not know, of course, under what conditions you have operated the motor, but the fact is, that I have the motor tested the idea and wound a motor myself some time ago in the same way, which operated satisfactorily in connection with my arc controller. I feel confident, therefore, if you would send me the motor that you constructed and give me an opportunity to test it, that it would be satisfactory. That I want is to find somebody who will make these machines for me in quantity, as I have not the necessary facilities; the other parts of the arc controller I intend to manufacture myself.

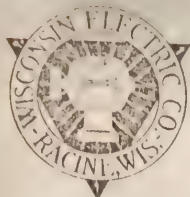
Hoping to hear further from you at an early date, I remain,

Yours very truly,

LOUIS H. HAMILTON
PRESIDENT & GEN. MGR.

CHESTER H. BEACH
VICE PRESIDENT

ARTHUR HUGUNIN
SECY & TREAS.



WISCONSIN ELECTRIC COMPANY

INCORPORATED

ELECTRICAL DUMORE SPECIALTIES

RACINE, WISCONSIN

May 28, 1918.

MANUFACTURERS
OF

PORTABLE GRINDERS

SEWING MACHINE
MOTORS

FRACTIONAL
H. P. MOTORS

POLISHERS AND
BUFFERS

ELECTRIC DRILLS

CLOTH CUTTERS

VACUUM CLEANERS

BILLIARD TABLE
CLEANERS

CLOTHES CLEANERS

ERASER CLEANERS

BLOWERS

HAIR DRYERS

SHOE DRYERS

DRINK MIXERS

Mr. George Scheriff
17 Battery Place,
New York, New York

Dear Sirs:-

We received your letter of the 23rd
referring to a special wound motor that we were
to build for you.

No doubt our reply to your pre-
vious letters has not yet reached you. We
regret to inform you that we cannot serve you
with this kind of a motor. Our Engineers attempted
to build the motor of this kind, and report that
they were unsuccessful in building a motor as you
have outlined, that would develop sufficient power
to be of any service.

Very truly yours,

WISCONSIN ELECTRIC COMPANY

PER

RIP/HCS

R. H. Beach

May 23, 1918.

Wisconsin Electric Company,
Pacino, Wisconsin.

Gentlemen:-

I beg to refer you to my letter of April 23rd and previous correspondence on the subject of a specially wound motor, which you were to make for me, and inquire when I may expect to receive this machine. There is a large demand for device in which this motor is to be used, I am very anxious to get the business and shall be obliged if you will do what you can for an early delivery.

Yours very truly,

April 23, 1918.

Wisconsin Electric Company,
Racine, Wisconsin.

Gentlemen:-

Your favor of April 4th reached me only to-day on account of my absence from the City.

I thank you for your readiness to make up the special motor for me and in reply to your questions wish to say the following.

The machines are to be used in connection with arc controllers for moving picture machines and projection lamps. In practice one of the field windings is connected across the arc and the other across a rheostat in opposite direction, so that when the current through both circuits is equal, the magnetizing effect will be annulled and the motor will be at rest. Then, however, the carbons burn away, the current through one of the circuits will preponderate, the motor will start and operate the carbon feeding mechanism, feeding the carbons together until the current through both circuits is again equal. The motor, therefore, should have a strong starting torque with a weak field.

I should like you to use for this winding one of your universal motors, so that I may be able to make some tests with it on D.C. as well as A.C. The motor will rotate in both directions to take care of any change in the line voltage. In my experiments I have used a small motor of about the size of those used for mixing drinks, and I think that your Type C motor will be of sufficient power at the normal speed. The shaft extension on this motor is of sufficient length.

Trusting that with this additional information you will be able to make up the motor for me, and hoping to hear further from you soon, I remain,

Yours very truly,

C O P Y

WISCONSIN ELECTRIC CO.,
RACINE, WISCONSIN.

April 4, 1918.

Mr. George Scherff,
17 Battery Place,
New York City.

Dear Sir:

Your letter of March 29th, is received
in reply to ours of March 25th.

We have given this drawing to our engineer
who reports that the diagram is very clear, but for our
information we must know the following:

What current is to be wound for: A.C. or
D.C.? What direction of rotation is necessary and what is
the approximate H.P. required at any given speed? Is the
shaft extension on the Type C of the correct length?

It would further aid us in building this motor
if you know, and if you care to tell, what you are using this
machine for.

We would state definitely that we will be glad
to build this motor for you.

Thanking you to give us this information, we
remain,

Very truly yours,

Wisconsin Electric Co.

March 29, 1918.

Wisconsin Electric Company,

Racine, Wisconsin.

Gentlemen:-

I beg to acknowledge a receipt of your favor of March 25th, in reply to my letter of the 21st. I find that I have not made myself clear, as you do not seem to have understood my question. I am aware, of course, that you do not have differentially wound motors in stock, and I am sorry had the purpose of asking, if you would be willing to make such a machine for me. What I need is merely a special winding on one of your regular motors, and I enclose a diagram showing this winding. The fields should be wound with two wires, both wires being wound at the same time, thus making two coils for each field. One set of these field coils should be connected in series - see circuit A of diagram - and the other set should be connected in series with the armature - see circuit B of diagram - and the four terminals brought out. Another important requirement is, that each one of the circuits A and B should take no more than about one-twentieth ampere on a 60 volt circuit. I believe that your type C motor would suit my purpose, if it is possible to get the required field windings into this motor, otherwise a type D motor will do. Your engineer, of course, will have no difficulty in determining this from the data given.

I beg to enquire again, if you are willing to make up this machine for me for a test, and if so, let me know your price

Wisconsin Electric Co. May 29, 1918.

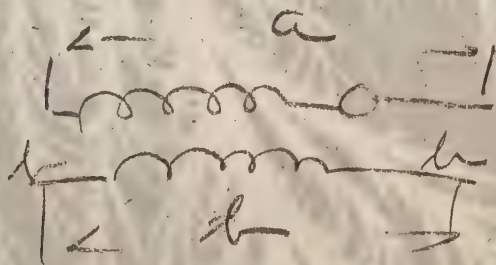
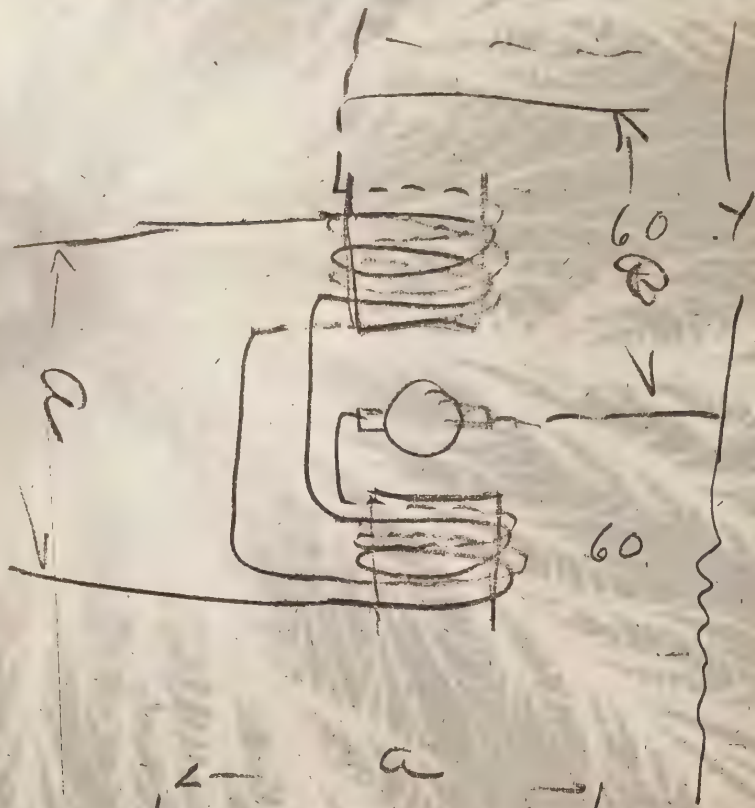
-2-

of the same in lots of one, two and three hundred.

Your machine has been recommended to me by Mr. Nikola Tesla, and therefore I should like to use it in connection with my controllers.

Yours very truly,

Encl.



is a resistor
He is the

no

36
25
11

1000
off m
at 2 m
from the
of m, 1896
L 0 m
to the

Wind field coils with two wires - winding both at the same time. One set of field windings to be connected in series, see circuit A. and then terminals also brought out. The other set of field windings should be connected in series with the armature, see circuit B. Each circuit to take a ampere or 60 volts.

March 21, 1913.

Wisconsin Electric Company,
Racine, Wisconsin.

Gentlemen:-

Your address has been furnished me by Mr. Nikola Tesla, whom I consulted concerning a specially wound motor which I require. What I need is a differentially wound motor of a fractional horse-power, and I beg to inquire if you would be willing to make up such a machine for me. If so, kindly send me a pamphlet showing the sizes and types of motor you manufacture and I shall send you full specification.

The motor is intended for use in connection with a new kind of circuit controller, for which there seems to be a considerable market.

Yours very truly,

TESLA, Nikola:

physicist

1857 in

Electrician, inventor; b. Smiljan, Meka, border country of Austria-Hungary; son of a distinguished Greek clergyman and orator, and of Georjiana Pandic, a famous woman and inventor, whose father was also an inventor; ed. in elementary school of native place, 4 years in public school in Gospie, Meka, 4 years in Lower Real School, Gospie, and 3 years in Higher Real School, Carlsstadt, Croatia, where was grad. 1873. Originally destined for the clergy, but prevailed upon parents to send him to the Polytechnic School in Gratz, where for four years he studied mathematics, physics and mechanics, following with two years in philosophical studies at Univ. of Prague, Bohemia. Began his practical career, 1881, in Budapest, Hungary, where he made his first electrical invention, a telephone repeater, and conceived the idea of his rotating-magnetic field; thence went to France and Germany, where was successively engaged in various branches of engineering and manufacture; since 1884, in U.S., of which is a naturalized citizen. Author of numerous scientific papers and addresses. Among his inventions and discoveries are: System of arc lighting, 1886; Tesla Meter, and system of alternating current power transmission, popularly known as 2-phase, 3-phase, multiphase and polyphase systems, 1888; system of electrical conversion and distribution by oscillatory discharges, 1889; generators of high-frequency currents and effects of these, 1890; transmission of energy through a single wire without return, 1891; the Tesla Coil or Transformer, 1891; novel system of electric lighting by Tesla tubes, 1891; investigations of high-frequency effects and phenomena, 1891-93; system of wireless transmission of intelligence, 1893; mechanical oscillators and generators of electrical oscillations, 1894-95; researches and discoveries in radiations, material streams and emanations, 1896-98; high-potential magnifying transmitter, 1897; system of transmission of power without wires, 1897-1900; economic transmission of energy by refrigeration, 1898; art of Telautomatics, 1898-99; discovery of stationary electrical waves in the earth, 1899; burning of atmospheric nitrogen, and production of other electrical effects of transcending in-

he is a resident

He is the

etc

1894-95

1896-98

1897-1900

1898-99

1899

NIKOLA TESLA, Electrician, Physicist and inventor, born 1857 in Smiljan, Lika, border country of Austria-Hungary, as the son of a distinguished Greek clergyman and orator, and of Georgiana Mandic, a famous woman and inventor, whose father was also an inventor. His education began in the elementary school of his native place, continued four years in the public school in Gospić, Lika; four years in Lower Real School in Gospić, and three years in Higher Real School, Carlstadt, Croatia, where he was graduated in 1873. Originally he was destined for the clergy, but prevailed upon his parents to send him to the Polytechnic School in Gratz, where for four years he studied mathematics, physics and mechanics, following with two years in philosophical studies at the University of Prague, Bohemia. He began his practical career 1881, in Budapest, Hungary, where he made his first electrical invention, a telephone reporter, and conceived the idea of his rotating magnetic field, thence he went to France and Germany, where he was successively engaged in various branches of engineering and manufacturing; since 1884 he is a resident in the United States, of which he is a naturalized citizen.

Mr. Tesla is the author of numerous scientific papers and addresses, and honorary or regular member of many scientific societies, institutions and academies in the United States and abroad; he is a life member of the British Association for the Advancement of Science and a Fellow of the Royal Institution of Great Britain; M. A. of Yale and L. D. of Columbia, both degrees being honorary, and a Doctor of Science of the Vienna Polytechnic School, the latter distinction being conferred upon him in acknowledgment of his discoveries of the principles of wireless power transmission; the Elliott Cresson gold medal was awarded him in recognition of original work first presented before the Franklin Institute and the National Electric Light Association in 1893, in which wireless transmission was one of the most important chapters.

Among his inventions and discoveries are: System of arc-lighting, 1886; Tesla motor and system of alternating current power transmission, popularly known as two-phase, three-phase, multi-phase or poly-phase systems, which have created

a revolution in electrical engineering; the now universally adopted (1828); system of electrical conversion and transmission by oscillatory discharges, 1889; generators of high-frequency currents; effects of these, 1890; transmission of energy through a single wire without return, 1891; the Tesla coil or transformer, which has proved an indispensable adjunct in wireless transmission, 1891; investigations of high-frequency effects and phenomena, 1891 - 93; system of wireless transmission of intelligence, 1893; mechanical oscillators and generators of electrical oscillations, 1894; his researches and discoveries in novel radiations, material streams and emanations, ^{were} published in a series of papers in the Electrical Review, New York, 1896 - 1898, in which he announced all the salient phenomena later attributed to radium; high-potential magnifying transmitter, 1897; system of transmission of power without wires, 1897 - 1905; economic transmission of energy by refrigeration, 1898; art of Telautomatics, 1898-99; discovery of stationary electrical waves in the earth, 1899; burning of atmospheric nitrogen, and production of other electrical effects of transcending intensities, 1899-1900; method and apparatus for magnifying feeble effects, 1901-1902; art of individualization, 1902-1903; the development of his system of world-telegraphy and telephony and of the transmission of power without wires has engaged much of his attention since that time. A number of discoveries in the electrical field made by Mr. Tesla, about which he has not yet announced, he considers of greater importance than any electrical work he has so far done. His most important recent work is the discovery of a new mechanical principle, which he has embodied in a great variety of machines, as reversible gas and steam turbines, pumps, blowers, air compressors, water turbines, mechanical transformers and transmitters of power, hot-air engines, etc. This principle enables the production of prime movers capable of developing ten horse-power, or even more, for each pound of weight. By their application to aerial navigation, and the propulsion of vessels high speeds are practicable, and the results so far obtained are very promising.

a revolution in electrical engineering practice and are now universally adopted
[1888]; novel system of electric lighting by Tesla tubes, 1891;

MECHANICAL THERAPY

II

In order to convey a clear view of the significance and revolutionary character of this discovery it is indispensable to make a brief statement regarding **EC-DITHICAL THERAPY**.

Fifty years ago, while investigating high frequency currents as developed by me at that time, I observed that they produced certain physiological effects offering now and great possibilities in medical treatment. My first announcement spread like fire and experiments were undertaken by a host of experts here and in other countries. When a famous French physician, Dr. D'Arsonval, declared that he had made the same discovery, a heated controversy relative to priority was started. The French Academy to honor their countryman, made him a member of the Academy, ignoring entirely my earlier publication. In order to take steps for vindicating my claim, I went to Paris, where I met Dr. D'Arsonval. His personal charm disarmed me completely and I abandoned my intention, content to rest on the record. It shows that my disclosure antedated his and also that he used my apparatus in his demonstrations. The final judgment is left to posterity.

Since the beginning, the growth of the new art and industry has been phenomenal. Home manufacturers turning out daily hundreds of sets. Many millions are now in use throughout the world. The currents furnished by them have proved an ideal tonic for the human nerve system. They promote heart action and digestion, induce healthful sleep, rid the skin of destructive eruptions and cure colds and fever by the warmth they create. They vivify atrophied or paralyzed parts of the body, allay all kinds of suffering and save annually thousands of lives. Doctors in the profession have assured me that I have done more for humanity by this medical treatment than by all my other discoveries and inventions. Be that as it may, I feel certain that the **MECHANICAL THERAPY**, which I am about to give to the world, will be of incomparably greater benefit. Its discovery was made accidentally under the following circumstances.



I had installed at the laboratory, 35 South Fifth Avenue, one of my mechanical oscillators with the object of using it in the exact determination of various physical constants. The model was bolted in vertical position to a platform supported on elastic cushions and, when started by compressed air, performed minute oscillations absolutely isochronous, that is to say, occurring at rigorously equal intervals of time. So perfect was its functioning in this respect that clocks driven by it indicated the hour with astronomical precision. One day, as I was making some observations, I stepped on the platform and the vibrations imparted to it by the machine were transmitted to my body. The sensation experienced was as strange as appreciable, and I asked my assistants to try. They did so and were surprised and pleased like myself. But a few minutes later some of us, who had stayed longer on the platform, felt an unspeakable and pressing necessity which had to be promptly satisfied, and then a stupor descended upon me. Evidently, these isochronous and oscillations stimulated powerfully the peristaltic movements which propel the food-stuffs through the alimentary channels. A means was thus provided whereby the contents can be perfectly regulated and controlled, and without the use of drugs, specific means for internal applications.

When I began to practice with my assistants MECHANICAL THERAPY we used to finish our meals quickly and rush back to the laboratory. We suffered from dyspepsia and various stomach troubles, biliousness, constipation, flatulence and other disturbances, all natural results of such irregular habit. But after only a week of application, during which I improved the technique and my assistants learned how to take the treatment to their best advantage, all these forms of sickness disappeared as by enchantment and for nearly four years, while the machine was in use, we were all in excellent health. I cured a number of people, among them my great friend



- 3 -

Mark Twain whose books saved my life. He came to the laboratory in the worst shape suffering from a variety of distressing and dangerous ailments but in less than two months he regained his old vigor and ability of enjoying life to the fullest extent. Shortly after, a great calamity befell me: my laboratory was destroyed by fire. Nothing was insured and the loss of priceless apparatus and records gave me a terrific shock from which I did not recover for several years. The enforced discontinuance of MECHANICAL THERAPY also caused me deep regret. I had evolved a wonderful remedy for ills of inestimable value to mankind and invented apparatus offering unbounded commercial possibilities but when I came to consider practical introduction I realized that it was entirely unsuitable. It was big, heavy and noisy, called for a continuous supply of oil, part of which was discharged in the room as fine spray; it consumed considerable power and required a number of objectionable accessories. During the succeeding years I made great improvements and finally evolved a design which leaves nothing to be desired. The machine will be very small and light, operate noiselessly without any lubricant, consume a trifling amount of energy and will be, to my knowledge, the most beautiful device ever put on the market. The intention is to exhibit it in action at the occasion of my annual reception in honor of the Press which has been, unfortunately, delayed this year, and I anticipate that it will elicit great interest and receive wide publicity. Unless I am grossly mistaken it will be introduced very extensively and, eventually, there will be one in every household.

The practical application of MECHANICAL THERAPY through my oscillators will profoundly affect human life. By insuring perfect regularity of evacuations the body will function better in every respect



- 1 -

and life will become enjoyable. One of the most potent remedies is the great potent remedy, which are the most potent of the stomach. And derived from the action of organs affable to expect that actions ulcers and action will be cured even in case of a case. Skilled physicians and surgeons will be able to perform veritable miracles with such oscillations. They stimulate strongly the liver, spleen, kidneys, bladder and other organs and by these desirable actions they must contribute not a little to well-being. Persons suffering from anemia of any form will be especially helped by the treatment. But the greatest benefit will be derived from it by women who will be able to enjoy without the usual tiring abstinence, pollution, sacrifice of time and money and therefore they have to endure. They will improve their appearance, acquire clear eyes and complexions and it may be safely predicted that long continued treatment will bring forth feminine beauty never seen before. It is not to be forgotten that the elimination of countless drugs, patent medicines and specific remedies of all kinds taken internally, by which millions of people doom themselves to an early grave, will be of untold good to humanity.

such safer and more important results will be obtained possibly to the matter of heart by caused by some acute process and normal operation or vital improvement will be and removal of toxic encroachment of disease. It is reasonable to expect that this and other healthful action internal lesions or abscesses will be obtained. Skilled physicians and surgeons will be able to perform veritable miracles with such oscillations. They stimulate strongly the liver, spleen, kidneys, bladder and other organs and by these desirable actions they must contribute not a little to well-being. Persons suffering from anemia of any form will be especially helped by the treatment. But the greatest benefit will be derived from it by women who will be able to enjoy without the usual tiring abstinence, pollution, sacrifice of time and money and therefore they have to endure. They will improve their appearance, acquire clear eyes and complexions and it may be safely predicted that long continued treatment will bring forth feminine beauty never seen before. It is not to be forgotten that the elimination of countless drugs, patent medicines and specific remedies of all kinds taken internally, by which millions of people doom themselves to an early grave, will be of untold good to humanity.

THE NEW TESLA ELECTRIC HEATER.

STRICTLY CONFIDENTIAL.

This device is greatly superior to the usual flat coil type in efficiency and other respects. It consists of a thin polished metal tube acting as reflector and a base equipped with switch and connecting terminals, and carrying spaced resistor wires concentric with the tube and at a certain distance from the inner surface of the same. In this arrangement the diffuse radiation is virtually eliminated, and the heater operates as if the resistor were not present, the rays being projected from the reflector radially to the central or focal region occupied by the boiling pot.

The principal advantages thus secured are the following:

1. A very high efficiency, as much as 96% being attainable.
2. The efficiency is practically the same whether the pot is large or small, since the density of the rays is inversely as the diameter of the vessel.
3. Due to these features the current consumption is hardly more than half of that in the best heaters of the type referred to.
4. The resistor has a relatively much longer life and can be made to last almost indefinitely in some cases. Also less wire can be used if desired.
5. The heat being largely confined to the range, the kitchen remains comparatively cool.
6. Another practical advantage is greater safety from a variety of accidents frequently occurring with ordinary ranges.
7. The new heater is especially adapted for use on shipboard, Pullman cars, aerial vehicles and automobiles.
8. Likewise it is suitable for all kinds of service on the table, being free from the objections of the present type.
9. It saves considerable time in certain applications.
10. Owing to simplicity, the cost of manufacturing is low.

the subject you wish to write
about. In order to explain this
phenomenon Einstein has
invented the quantity " λ "

My theory of gravitation
explains this phenomenon
perfectly

N. T. April 15. 1932.

We read a great deal about the
~~cosmic rays~~ matter being
changed into force and force
being changed into matter
by the cosmic rays. This is
absurd. It is the same as
saying that the body can be
changed into the mind, and the
mind into the body. We know
that the mind is a functioning
of the body, and as the same
matter force is a function of
matter. Without a body there
can be no mind, without matter
there can be no force.

Einstein has for years developed
formulas explaining the mechanism
of the cosmos. In doing this he
overlooked an important factor,
namely the fact, namely that some
of the heavenly bodies are increasing
in distance from the sun. This
is the same as writing for a
business letter and forgetting

PROSPECTUS FOR MR. TESLA'S NITRATES COMPANY.

Discoveries
~~Mr. Nikola Tesla, whose~~ ~~inventions in high-frequency~~
~~electric currents~~ have formed the basis of so many ~~important~~
~~more recent practical applications of electricity, and which by~~
~~their world wide recognition have given this inventor a pre-eminent~~
~~position in the field of electricity, has, by a series of discover-~~
~~ies extending over many years, and all protected by broad patents~~
~~in all the great countries of the world, involved a system for~~
~~the fixation of atmospheric nitrogen,~~ *that is, its chemical combination with*
~~the oxygen of the atmosphere into~~ *air*
~~a fixed compound (nitric acid or its compounds), which, by its~~
tremendous value and wide-reaching influence, bids fair to outrank
many times his wonderful invention of the alternating current motor.
~~Mr. Tesla in a field peculiarly his own, has discovered -~~ *(over)*

*Has evolved
a new and
efficient
process for*

~~First, that his high-frequency electric discharges in~~
~~the atmosphere give in a much more effective degree a peculiar~~
~~electric chemical stress, which brings about this most difficult~~
~~of combinations; a stress which all workers in this field have~~
~~recognized for years as being one which not only must be of~~
~~tremendous power, but of almost infinite suddenness. The time~~
~~element which has so materially interfered with the success of~~
~~other workers in this field~~ *i. by Mr. Tesla's invention, been*
~~almost entirely removed as a~~ *objection.*

~~Second, Mr. Tesla's peculiar means of obtaining phenom-~~
~~enally high voltages (ranging up to the millions of volts) from~~
~~apparatus of most moderate~~ *has enabled him to obtain the*

early ~~the first~~ recognized the
a departure, and
ago he made the
the electric fixation of nitrogen
an industry next to that of iron
done towards commercial exploitation
shown by the fact
plants have been erected
Norway, ~~which alone~~
Lorraine and produce 120,000 tons
of ammonia annually and fifty million dollars have been already
expended on the

immense possibilities of such
etc. published a few years
prediction that ~~the~~ ~~industry~~
hydrogen would before long develop into
importance. At that time nothing had been
done but his foresight in
it in various countries extensive
large ~~industries~~ have been made. In
since ~~the~~ ~~factories~~
~~it is~~ ~~now~~ ~~one~~ ~~quarter~~ ~~million~~
~~of~~ ~~tons~~ ~~of~~ ~~nitric~~ ~~acid~~
have been already suggested in the industry
are ~~based~~

method and apparatus utilizing no more than a few percent
of the electric energy of the current, and calling for a
first cost so great, ~~that the~~ interest and maintenance charges have rendered the
business indifferently attractive to capital.

The fixation or burning of atmospheric nitrogen
is effected economically ~~by~~ by lightning discharges which
precipitate from four to twenty pounds of nitrogenous
compounds per acre per year, an enormous amount
when considering their scarcity. This high efficiency
is due to the great power, suddenness, length and volume of
the discharges, and instant cooling, resulting therefrom.

These ideal requirements are fulfilled in
the new ~~fact~~ ^{which is the result of years of labor and is now} process owned by the Tesla Nitrofix Company.
The "Tesla Transformer" ~~enables~~ ^{enables it possible to obtain} the production of
electrical effects of virtually unlimited power, surpassing
even those of lightning, as has been demonstrated in actual experiments
by its inventor.

The "high frequency" or so-called Tesla currents ~~are~~
have the peculiarity ~~of~~ of exciting the dormant effi-
cacy of nitrogen, causing the gas to combine ^{more readily and} with
a lower expenditure of energy.

XXXX

~~attenuated are so necessary for the highest efficiency.~~

~~Third, by virtue of the peculiar nature of Mr. Tesla's transformer, he is enabled to produce a certain tonnage of product with such a small amount of apparatus and a consequently reasonable investment as to multiply a thousand-fold, the capacity efficiency of his plant. This item is of vast importance in connection with this subject. Many experimenters have produced nitric acid from the atmosphere and there are now some very large plants engaged in this industry, and particularly in Norway, that involves upwards of \$50,000,000, and which will absorb some 200,000 horse power when it is fully expended, but without exception all these efforts have resulted in a first cost of apparatus so great that the interest and maintenance alone thereof puts a fixed charge upon each ton of the product that has heretofore rendered the business indifferently attractive to capital. Ignoring, there-~~

~~for the moment, the increased efficiency claimed by Mr.~~

~~Tesla, or his novel method of burning the atmosphere, and granting only that he shall burn it as it has been done before by attenuated~~

~~that his devices are applied to the old process, the commercial~~
~~fact, it will be readily seen that if he can reduce the cost of the~~
~~apparatus secured will still be such as to make the success~~
~~of the project absolutely certain, if power can be had at a reasonable price, for~~
~~nothing to get power at a sufficiently reasonable price to make~~
~~of the project absolutely certain. Pure nitric acid~~
~~the plant, instead of costing 80-100 dollars per ton of annual product, will cost for an~~
~~and its salts (and all nitrate prepared thus from the atmosphere~~
~~are pure) will cost from \$100 to \$200 per ton, and even the crude~~
~~of commerce, such as the Chili saltpeter with 5% of~~
~~impurities, sell for \$55, and better. Therefore~~
~~what a small charge of investment of \$8. or \$10. per ton of put-~~

~~put becomes. The operation of these plants, like those of hydro-~~
~~electric installation, require but little labor. There is no essential~~
~~and care.~~

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~~xxxx~~ & Their inconceivable suddenness, removes one great obstacle which has so materially interfered with the success of the old method and appliances.

* Tesla means for generating enormous electrical pressures with apparatus of surprisingly small dimensions, enables the production of discharges or arcs of the great length and volume

so necessary to the highest efficiency.

By these means it is possible to operate units of any capacity, however great, to burn the air at any desired rate and thus increase

a thousand fold the effectiveness of the plant.

The Tesla apparatus may be likened to a turbine running at a stupendous speed, while that ~~is~~

~~apparatus~~ ~~now employed~~ is comparable to an old fashioned engine turning slowly. For the same performance the latter is ever so much more cumbersome and expensive. ~~That~~

~~a sub being in the first cost and first charges~~

* This is of vital importance to the enterprise reducing as it does, to a minimum the first cost ^{the burden of} and ^{the} fixed charges. To illustrate, ~~namely that~~ disregarding xx (other side)

part ~~of the plant~~ ^{of the plant} ~~that is~~ subject to rapid wear and tear; ^{deterioration} in fact, most of it is ~~good for one hundred years~~ ^{and is good for centuries}, as it consists principally of brick ~~buildings, transformers, brick or tile combustion chambers and equipment; pipes or their equivalent.~~ ^{and metal} The process is a continuous one ~~once started~~ ^{once started} requires no manual labor, ~~the electricity~~ ^{electricity} continuing to burn the atmosphere into nitric fumes, which in turn combine with water to make nitric acid, and this goes on until the ~~current~~ ^{current} is switched off, and immediately recommences when ~~the current~~ ^{the current} is ~~switched~~ ^{switched} on.

There is no loss upon the discontinuing of the process for an hour, a day, a month or a year, ~~except~~ ^{other than} that ~~due~~ ^{due} to plant lying idle and carrying its ~~own~~ ^{no small} interest. It is obvious, therefore, that it ~~only remains to obtain power at a sufficiently~~ ^{by the use of the revolutionary process a most} reasonable ~~price to make an almost unlimited industry of this~~ ^{can be built up} with a very reasonable investment of capital yielding annually a return many times the first cost.

The Tesla Nitrates Company owns the exclusive rights under the ~~United States~~ ^{United States} patents granted to ~~Mr.~~ ^{and} Tesla, applicable to the manufacture of nitrates from the atmosphere, ~~which are the following:~~ ^{and}

~~It is his own~~ ^{It is his own} future ~~inventions~~ ^{improvements} when they shall be made, relative to this subject, and ~~will get the benefit of his assistance and advice.~~ ^{will get the benefit of his assistance and advice.}

~~It is proposed to immediately make a demonstration of the~~ ^{It is proposed to immediately make a demonstration of the} ~~salient advantages of the novel process with a model plant~~ ^{salient advantages of the novel process with a model plant} ~~on the commercial magnitude in the immediate vicinity of New York~~ ^{on the commercial magnitude in the immediate vicinity of New York}

City, where experts and investors may see ~~for themselves~~ ^{for themselves} the practical application of ~~these~~ ^{his} inventions, ~~in a full sized unit~~ ^{and judge for themselves of their value}

apparatus. ~~In making this test, Mr. Tesla will have at his disposal, a plant that has already cost over \$200,000, a large~~ ^{In making this test, Mr. Tesla will have at his disposal, a plant that has already cost over \$200,000, a large}

part of which will be immediately available. ~~It is estimated that~~ ^{It is estimated that} ~~this test will involve an expenditure of \$25,000~~ ^{this test will involve an expenditure of \$25,000}

~~the sum~~ ^{will be ample to meet}

ishing of the additional apparatus, partly for attendance and
all expenses at this Convention. Undoubtedly this plant will serve
operation and partly for the very full and exhaustive demonstra-
the important purpose of exhaustively testing the latest improvements
tion which it is proposed to be made.
prior to their application on the large scale contemplated.

XXXX # Tester is now devoting himself to
the perfection of plans for ~~scale~~ ^{installation} a large plant
being installed in this work by a ~~man~~ ^{man}
premier of international ^{repute} ~~engineer~~ ^{who has been for a long time}
~~has~~ a long experience in the fixation of nitrogen
by the old method and is thoroughly familiar
with all ~~and~~ facts pertaining to the manufacture
and sale of the products. In the mean
time X K

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TESLA'S NEW SYSTEM OF FLUID PROPULSION

In subduing the forces of Nature to his service man must invariably avail himself of some process in which a fluid acts as carrier of energy, this being an essential step in any industrial undertaking dependent on mechanical power. Evidently then, a discovery or radical departure in that domain must be of extreme importance and far-reaching influence on the existing conditions and phases of modern life.

Fluid propulsion is now effected by means of pistons, vanes or blades, which entail complexity of construction and impose many limi-

tations on the propelling as well as propelled mechanism and its performance. Tesla has dispensed with these devices and produced machines of extraordinary simplicity which, moreover, are in many other respects superior to the old types universally employed. A few words will be sufficient to convey a clear idea of his invention.

Every fluid, as water or air, possesses two salient properties: adhesion and viscosity. Owing to the first it is attracted and clings to a metallic surface; by virtue of the second it resists the separation of its own particles. As an inevitable consequence a cor-

tain amount of fluid is dragged along by a body propelled through it; conversely, if a body be placed in a fluid in motion it is impelled in the direction of movement. The practical forms of Tesla's apparatus consist of flat, circular disks, with central openings, mounted on a shaft and enclosed in a casing provided with ports at the periphery and central portions. When deriving energy from any kind of fluid it is admitted at the periphery and escapes at the centre; when, on the contrary, the fluid is to be energized, it enters in the centre and is expelled at the periphery. In either case it traverses the in-

terstices between the disks in a spiral path, power being derived from, or imparted to it, by purely molecular action. In this novel manner the heat energy of steam or explosive mixtures can be transformed with high economy into mechanical effort; motion transmitted from one shaft to another without solid connection; vessels may be propelled with great speed; water raised or air compressed; an almost perfect vacuum can be attained, substances frozen and gases liquefied.

While this improvement has the broadness and applicability of a fundamental mechanical concept, the widest field for its

commercial exploitation is, obviously, the thermodynamic conversion of energy.

The commercial value of a prime-mover is determined by its efficiency, specific performance relative to weight and space occupied, cheapness of manufacture, safety and reliability of operation, adaptability to construction in large quantities, capability of running at high peripheral velocity, reversibility, and a number of other features of lesser importance. In the majority of these a machine, operating on the new principle, excels. But there is one quality which is most desirable in a thermo-dynamic transformer from the

economic point of view, and that is great resistance to deterioration and impairment of efficiency by heat.

The employment of high temperature is of such vital bearing on the efficiency of prime-movers that it is of paramount importance to extend the thermal range as far as practicable. In the present state of the art radical progress towards more economical transformation of the energy of fuel can only be achieved in that direction. Such being the case, the capability of the machine to withstand deteriorating effects of great heat is the controlling factor in determining its commercial value. In that most desired quality the

Tesla turbine surpasses all the older types of heat motors. The Diesel and other internal combustion engines are fatally limited in this respect by their complete dependence on closely fitting sliding joints and unfailing supply of clean lubricant; while in the present forms of turbines buckets, blades and inherent mechanical deficiencies impose similar restrictions. These parts are too delicate and perishable to serve as elements of a gas turbine and this has been the main obstacle in the way of its successful realization. The rotor of the Tesla turbine presents a relatively enormous

active area and the wear is quite insignificant as the fluid, instead of striking against the propelling organs in the usual destructive manner, flows parallel with the same, imparting its momentum by adhesion and viscosity instead of impact. Moreover it has been shown that the efficiency of this form of rotor is not impaired to any appreciable degree by a roughening of the disks and that it operates satisfactorily even if the working medium is corrosive to an extent.

The universal adoption of steam as motive power under certain standard conditions, settled upon in the course of time, gradually forced upon the minds of engineers the Rankine

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Cycle Efficiency as criterion of performance and long continued endeavors to improve the same have finally resulted in complex multistage constructions entirely unsuitable for high temperatures. The Tesla turbine, by virtue of its exceptional heat-resisting and other unique properties, makes possible the attainment of great fuel economy with but a single stage, incidentally offering the additional advantages of an extremely simple, small, compact, and reliable mechanism. But perhaps the chief commercial value of this new prime-mover will be found in the fact that it can be operated with the cheapest grade of crude oil, colloidal fuel, or powdered coal, containing con-

siderable quantities of grit, sulphur and other impurities, thus enabling vast sums of money to be saved annually in the production of power from fuel.

The Tesla turbine also lends itself to use in conjunction with other types, especially with the Parsons with which it forms an ideal combination. Although its practical introduction has been delayed by the force of circumstances, a number of years have been spent in exhaustive investigations and experiments on the basis of which the performance in any given case can be closely calculated. The first public tests were made before the

outbreak of the war at the Waterside Station of the New York Edison Company where several machines, ranging from 100 to 5000 h.p., were installed and operated with satisfactory results. That the invention was appreciated by the technical profession may be seen from the excerpts of statements by experts and articles printed on the annexed page.

The salient advantages of the Tesla turbine may be summed up as follows:

EFFICIENCY: The most economical of the present prime-movers is the Diesel engine. But, quite apart of many practical and com-

mercial drawbacks, inseparable from this type, it is entirely dependent on comparatively expensive oil, so that the Tesla Gas Turbine, working with much cheaper fuel, would have the better in competition even if its efficiency as a thermodynamic transformer were appreciably lower, all the more so in view of its greater mechanical perfection.

Referring to turbines, all of which are surpassed by the Parsons in economy as well as extent of use, definite limits have already been reached and the only possibilities of saving fuel exist in the employment of steam at very high superheat

and utilization of gas or oil as motive fuel.

But none of the primemovers mentioned is

adapted for such operation and although every

effort has been made in this direction, no

signal success has been achieved. The super-

heat is at most 250° F. this being considered

the maximum permissible. All attempts to con-

siderably extend the thermal range have failed

chiefly because of the inability of bucket

structures to withstand the action of intense

heat. The Tesla Turbine can operate quite

satisfactorily with the motive agent at very

high temperature and, owing to this quality,

lends itself exceedingly well to these purposes.

SPECIFIC PERFORMANCE: In this particular it is superior to all other forms. Each disk is virtually the equivalent of a whole bucket wheel, and as many of them take up but a small width the output of the machine, considering its weight and size, is surprisingly great. This, while not being a measure of efficiency, is nevertheless a feature of considerable importance in many instances.

CHEAPNESS OF MANUFACTURE: The new turbine can be produced without a single machined part except the shaft, all the disks being punched

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and the casings pressed. By this method, with proper machinery installed on a large scale, the cost of production may be reduced to a figure never deemed possible in the construction of an engine. What is more, this can be done without material sacrifice of efficiency as small clearances are not essentially required.

SAFETY AND RELIABILITY OF OPERATION: There is an ever present danger in the running of high speed machines. A bucket turbine may at any moment run away and wreck the plant. Such accidents have happened again and again and this

peril has often proved a deterrent to investment.

A remarkable quality of this turbine is its complete safety. As regards the wear and tear of the propelling organs it is significant and, in any event, of no consequence on the performance.

ADAPTABILITY TO CONSTRUCTION IN LARGE UNITS: In all the present machines there is a distinct limit to capacity, for although large units can be manufactured, they are very costly and difficult to manage. The new turbine is so simple and the output so large that the limits in this direction can be greatly extended.

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115-121
115-121

RESISTANCE TO DETRIORATION BY HEAT AND OTHER

AGENTS:

In this feature again it has an overwhelming advantage over the old types in which the maintenance of smooth surfaces and sharp edges is indispensable to efficient working.

In the Tesla Turbine, for the reasons already stated, the destructive actions of heat and corrosive agents are much less pronounced and of relatively negligible effect. This fact has a most important bearing on the saving of fuel.

CAPABILITY OF RUNNING AT HIGH PERIPHERAL SPEED:

In this respect also it is superior to others. The rotating structure carries no load and is

excellently adapted to withstand tensile stresses. Judging from the most recent turbine practice this quality should be of special value.

REVERSIBILITY: The present turbines are greatly handicapped by their incapability of reversal which is a very serious defect in certain applications, as the propulsion of vessels, necessitating the employment of auxiliary turbines which detracts from the propulsive power and adds materially to the cost of production and maintenance of the equipment. The Tesla Turbine has the unique

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property of being reversible, not only this but it operates with the same efficiency in either direction. For marine purposes it therefore constitutes an ideal motor whether used alone or in conjunction with older types.

Besides the above it possesses other desirable features, constructive and operative, which will add to its value and adaptability to many industrial and commercial uses as, railroading, marine navigation, aerial propulsion, generation of electricity, refrigeration, operation of trucks and automobiles, hydraulic gearing, agriculture, irrigation, mining and similar purposes.

C. B. Richards, Professor Emeritus of Mechanics, Yale University: "I am amazed at the development of power given by the turbine and stunned by the exhibit."

P. Sargent, Chief Engineer and Turbine Expert: "I am impressed with the newness and novelty of the underlying principle of this invention. It is such as will claim the attention and admiration of anyone of a scientific turn of mind in a mechanical direction."

Reynold Janney, Chief Engineer, Universal Transmission Co: "It is a great invention."

Brigadier Allen of the War Department: "Something new in the Officers are greatly impressed with it."

Miller Reese Hutchinson, Chief Engineer: "It is the greatest thing of the age."

Arnold Irianyi, Chief Engineer, Colfeurungs-Gesellschaft, Cerna: "The ideal of the turbine engine."

E. E. C. Collins (Power Plant Economist): "It is a wonderful contribution to science and engineering, great in its simplicity and breadth of application."

The Motor World: "The new principle unquestionably is a great contribution to science and engineering, great in its simplicity and breadth of application."

Scientific American: "Considered from the mechanical standpoint the turbine is astonishingly simple and economical in construction, should prove to possess such a stability and freedom from wear and breakdown as to place it, in these respects, in advance of any type of steam or gas motor of the present day."

Engineering Magazine: "An entirely new form of prime mover with interesting possibilities."

Technical World Magazine: "The Tesla Turbine is the apotheosis of simplicity. It is so violently opposed to all precedent that it seems unbelievable."

From Numerous Articles and Comments:

"The turbine is different in principle to any heretofore in use and one which will take less room less coal than the best engine now running".....

"Turbine of revolutionary design"..... "Improvement in dynamics which promises revolutionary results"

"Results seem revolutionary to the point of staggering the imagination"..... "This motor will revolutionize the turbine industry"..... "Wonderful mechanical principle"..... etc. etc



LUNCHEON

in honor of their Excellencies

CONSTANTIN M. FOTITCH
Ambassador of Yugoslavia

VLADIMIR HURBAN
Ambassador of Czechoslovakia

tendered by

DR. NIKOLA TESLA

on the occasion of his

EIGHTY-FIRST BIRTHDAY

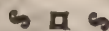


HOTEL NEW YORKER, NEW YORK
SATURDAY JULY 10, 1937



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Menu



Amontillado Glace

MELON MIEL ROSÉ



ESSENCE JULIENNE AU TOMATE GELÉE

Liebfraumilch



TRUITE DE RIVIERE AUX FINES HERBES
AVEC BROCCOLI EN BRANCHE

Chateau Pontecanet



CANARD EN CASSEROLE A LA TESLA

Cognac Martell



Cordon Bleu

GATEAU SOUVENIR
AVEC FRAISES GENIEVREES
CHATEAU d'YQUEM

Mount Vernon — 1921



Haig & Haig

MOCHA EN DEMI-TASSE

Cigars

Cigarettes

Amontillado Glass

Liebfraumilch

Chateau Pontecane

Cognac Martell
Cordon Bleu

Mount Vernon — 192
Haig & Haig

Cigars
Cigarettes

Index - 1905

FOR ACCOMPANIMENT.

Nikola Tesla's world fame is based on the inventions which he made during the last ten years of the past century. They lie in the electrotechnical field, especially in the field of low and high frequency alternating currents, and they are the result of extremely fruitful research work. Since that time there has been developed a mighty and many-sided alternating current industry which is still growing to-day, but Tesla's name is mentioned ever more rarely in connection with this industry, although it is not unknown that he had an eminent part in laying the foundations of the electrical industry.

In this book his countryman, S. Boksan, has collected an abundance of original material about Tesla's life work and discussed it historically and critically in its bearing on the complete development of the electrical industry, so that the book offers a welcome opportunity to gain an inspiring insight into the creative labors of a genius and pioneer of the electrical industry.

Not rarely has the question been raised why, in the modern commercial exploitation of electricity, Tesla does not take the part which might be expected in view of the undiminished greatness of his inventions. Technical men, according to their specialt judge differently the disappointments which have not appeared to Tesla. For me it lies near to point out, in respect to the field of wireless telegraphy, the manifold variations which our views have undergone in the course of time. The conception of the Hertzian waves has already changed, and that in a sense which

has not been favorable to the appreciation of Tesla's merit in wireless telegraphy.

Originally only such waves as Hertz himself had employed were called Hertzian waves, that is, waves of about one meter in length. The long waves of wireless telegraphy differ from them in many respects. They do not propagate in such straight lines as true Hertzian waves and also do not spread out in free space, but at the surface of the earth. If the description of wireless transmission of energy by means of Hertzian waves is possible was therefore in the first instance at least problematical; and it is probable that Tesla would not have been at all understood, if in the nineties he had explained his results by Hertzian waves.

It was only about the turn of the century that Max Abraham succeeded in proving that the waves emitted by a grounded transmitting conductor, excited by high frequency currents, can be calculated by the same equations as real Hertzian waves; only two limitations were to be made in this connection: first, the earth must not show any electrical resistance and, second, it must be smooth. Although these conditions are in reality only partly fulfilled, the waves of wireless telegraphy have since that time been identified with Hertzian waves; yes, the wireless waves are occasionally even confounded with light waves.

Marcini worked originally with the short Hertzian waves emitted by a Righi Oscillator. When he turned to the use of long waves, in accordance with Tesla's precedent, he could without hesitation describe his propagation processes as Hertzian waves, and only thereby had the correct raiment for

wireless telegraphy been found.

The description of Tesla's work contained in this volume might give numerous suggestions to everybody who looks beyond the far reaching every-day work of the electrical industry and has in view its general progress, and may it thereby serve not only for historical ~~recognition~~ justice, but also for the further development of the electrical industry!

Berlin-Steglitz, March 5, 1932.

Franz Kiebitz.

P R E F A C E .

The last forty years in the field of electrical engineering have been given their imprint by the polyphase current system, polyphase power transmission and the induction motor. Countless long distance central stations have been erected during this time in the entire world, many millions of horsepower have up to now been developed from water-power, and the development in this direction is gaining ever more in immensity. The transmission of electrical energy to great distances has in a short time become a mighty factor in the economics of electricity as well as in modern engineering and present-day civilization. The foundation for this development was laid in the year 1882, a round fifty years ago, by Nikola Tesla, through his discovery of the rotating magnetic field. Based on this epochal discovery Tesla himself, by intense research work lasting for ten years, made numerous detail inventions and discoveries which, together with his discoveries in the field of high tension technique, were disclosed in more than forty patents and have created the foundation for the great edifice of the present heavy current industry.

Following up this work, Tesla developed in 1890 his high frequency generators, and in 1891 his high frequency transformers, from which he has created in the succeeding years the foundations for high frequency technique and high frequency investigation. His celebrated address in Columbia College before the American Institute of Electrical Engineers on May 20, 1891 was accompanied by scientific experiments

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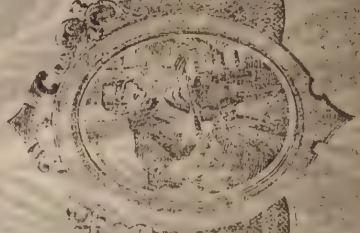
Langdon Greenwood

Treasurer.

Wm. Andrews

President.

The Tesla Machine Company, N.Y.



7

My dear H. Schuster,

The most important discoveries in the January 17, 1930
papers have been made and you frequently are
interested in the progress of the discovery soon.

1) The velocity which a planet orbiting around
another would attain in falling towards the
latter to its present position from infinity
is again its orbital velocity multiplied
with $\sqrt{2}$.

2) The kinetic energy of orbital motion of
a planet orbiting around another
is equal to half of that represented by
the fall plane beyond its sphere of attraction
of the latter.

Like the kinetic energy of a planet
orbiting around another, the kinetic energy
of a planet orbiting around the Sun
is equal to half of that represented by
the fall plane beyond its sphere of attraction
of the Sun.

Please preserve this paper.

Yours
L. J. S.

1930

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New York, Apr. 19th, 1906.

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We have your favor of the 16th inst., which
confirms telephone instructions to ship to you 2600 ft.
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FOR THE SAKE OF THE B...
 EMPLOYMENT AGENCY
 Wells and we turn our back.
 Tesla doing? We find him feeding pigeons. It is a comforting sight. We make a face at Mr. Wells.

...of the future. And what do we find Mr. Tesla doing? We find him feeding pigeons. It is a comforting sight. We make a face at Mr. Wells.

While We Cut Relie

...the Budg...
 ...the Budg...
 ...the Budg...

Rebuilding the Re

...the New York...
 ...the New York...
 ...the New York...

Mr. Nikola Tesla and Mr. H. G. Wells

...the people...
 ...the people...
 ...the people...

Tesla

ALTHOUGH the future to Mr. Einstein and others who operate on time, may be as clear as pi (the mathematical kind), it is to the rest of us, who are still on standard time, as foggy as a London alley. But it is certain that when the survivors of the present age of progress come to write the roster of our great, the name of Nikola Tesla will stand far up on the list. Tesla who predicted radio way back in 1900 now looks like a fellow sending waves to the moon. Tesla is the sort of scientist that H. G. Wells and Mr. H. C. Wells love, a mysterious brilliant man who has left our science for fourth-dimensional play in gloomy testtube-festooned laboratories. Forty years ago Tesla was toying with electrical discharges of many millions of volts, while today scientists have difficulty in developing a fraction of those potentials for their atom-smashing and X-ray experiments. Long before Marconi, Tesla girdled the earth with giant electrical waves from his high-voltage generators.

Tesla plans now to send a veritable Jovian bolt to our neighbor the moon, a beam capable of producing a large incandescent blemish on that pleasant night-time body. This bolt will carry energy waves capable of running machinery (lunar factory sites are going fast, so you'd better hurry). Although Tesla's new mechanism is a secret, it seems—from a little hint here and there—that the basic energy will be supplied by cosmic waves. Now!—if you haven't a shuddery plot doped out for a super-colossal piece featuring Boris Karloff, there's no use telling you any more.

—J. Wentworth Tilden.

Electric Sorcerer

PRODIGAL GENIUS The life of Nikola Tesla. By John O'Neill. 326 pp. New York: Grosset & Dunlap. \$1.75.

By WALDEMAR KAMPEFFERT

NIKOLA TESLA stalks through Mr. O'Neill's pages the fantastic figure that he was in life—a celibate recluse who sought supreme control over matter and energy, a Dr. Faustus who carved nothing for Marguerites, a philosopher filled with a vast discontent, a poet who toyed with artificial lightning. Though he was not of this world he was something of a bon vivant in his younger days. No one could order a dinner with nicer discrimination, no one had a finer taste in rare vintages. French, English, German, Italian and his native Serbian—he not only spoke them all but quoted their poetry to all who would listen. He lived in hotel rooms most of his life, a hermit in a metropolis, whose tall, lean figure could be seen on Fifth Avenue, sunk in his thoughts, unaware of the salutations of those who knew him, stopping only to feed the pigeons around the Public Library.

To Edison must go credit for having first built central stations, inventing electric lamps and putting us on our electrical feet. Yet not much of Edison's apparatus is left. What we see about us is largely Tesla's. The man was a pioneer who could make a fortune and spend it all on lavish experimenting and who died owning J. P. Morgan, John Jacob Astor, Austin Corbin and others several millions. All were so many rabbits in the intellectual clutch of this fascinating, too constricter. Newspaper reporters, though they could not understand what he was talking about, were enthralled with his proposals to communicate with Mars and to transmit power without wires over vast distances. Tesla knew

how to get publicity, and he liked to pose as an electric sorcerer. He would discuss his projects with apparent reluctance and in the end, as if he were utterly exhausted but only having exhausted the topic, would ask for another drink, talk on billiards or quote Goethe.

LIKE a medieval practitioner of black arts, Tesla was given to mystification. He was the first to talk of "death rays." Once he set up oscillations that shook buildings near his laboratory and brought the police from headquarters. What happened is not clear, for Tesla destroyed the apparatus. The tale reminds one of his contemporary, Keelley, who was largely responsible for the popularly accepted notion that a man playing a violin can shake down a skyscraper. It may be, too, that the generators of the Colorado Springs Electric Company blew out when Tesla, on P. K.'s Peak electrified himself and glowed weirdly. Engineers will wonder why effects that brought disaster to a power house two miles away without benefit of wires did not kill Tesla, and they will doubt if discharges of high voltage but very little amperage could do so much harm. It is not that we question Tesla but that we want more evidence than he ever supplied that an engineer can understand.

Here was a romanticist who should have been born in the Middle Ages. Electrical engineers never fully understood him. His mode of reasoning, his philosophic approach, were so much absurdism to them. Even in the one popular article that he wrote over forty years ago for the old Century Magazine he was vague as an oriental mystic. Soon after he came to this country Tesla was associated briefly with Edison. No greater



Tesla "in the Effulgent Glory of Myriad Tongues of Electric Flames."

contrast can be imagined: Edison, as practical as an Irish foreman of a railway section gang, who affected to despise theorists and mathematicians though he did not hesitate to employ them; the Serbian, a dreamer to whom most inventions were mere toys, his own included. No wonder the two parted.

Though he lived to be 85, Tesla crowded most of his inventive activity into twenty years. And what activity it was! Polyphase current engineering, the induction motor, the use of oil in transformers, radio, electric arcs fed by direct current in a magnetic field, gas-discharge lamps which were forerunners of Broad-

The Future of Flight

THE COMING AIR AGE By Reginald M. Cleveland and Leslie E. Neville. New York: Whittlessey House. 359 pp. \$2.75.

By EDWARD WARNER

THERE has been a mighty flood of books on aviation in recent years—books on every aeronautical specialty from navigation to welding, including impassioned polemics on air power. Still it has been difficult to find a single volume that could be recommended to the intelligent voter who sought a comprehensive view, and not an unduly romantic or impressionistic one, of how flight might affect human behavior and the world's economy in years to come.

It is for that voter, rather than for avid youth straining for its own wings, that "The Coming Air Age" is written. The authors have chosen a little-used target; and if they have not quite hit the bullseye, they have come close. Both are well known and long respected counselors to the aircraft industry—Mr. Cleveland who was formerly aeronautical editor of THE NEW YORK TIMES, Mr. Neville as editor of Aviation Magazine.

They have been most successful where they have been most specific. The continuity of the volume is scanty, for a variety of subjects is treated; successive chapters deal with matters ranging from the "economics of private flying to the possible functioning of a world police force. All lie within the province of the title of the book; and some, at least, are the best concise treatments of their subjects that are so far available to the general reader. The chapters which will arouse the quickest interest, those dealing with air transportation, are at once optimistic and sober. The technical problems are analyzed in simple terms together with the possibilities of

Only in the chapters on air-age education and on aerial policing do the authors' convictions appear to play the leading part. On education in particular, they write as passionate advocates of a realignment of the whole educational system around aeronautical requirements, interests and incentives. "The Coming Air Age" finds in aviation a new, dominant influence—not only in physics and chemistry, to which "belongs the heavy responsibility of teaching why the basic rules of safe flying must be observed," but in English, where "the school children of the air age . . . will have new reasons [aeronautical ones] for wanting to be literate," and in history, where "it is not going to be easy to teach them [young people] the proper historical perspective . . . when their own inclination on the matter is to date human progress from the Wright brothers—an inclination to which most of their other subjects can cater gladly."

All this may exaggerate the violence of the break with the past. A country with 30,000,000 automobiles, and millions of trained machine operatives, has not had to await the airplane to find evidence of the universal influence of new applications of physical science to technology; but such whole-hearted advocacy of such far-reaching proposals, supported by so many detailed illustrations, deserves respectful reflection even by those who will be quick to object to its underlying assumptions.

CONCERNING the use of air power in the preservation of peace, Messrs. Neville and Cleveland show a laudable readiness to go beyond the generalizations with which that subject is too often disposed of, and to come to grips with the questions of how

inventing electric lamps and putting us on our electrical feet. Yet not much of Edison's apparatus is left. What we see about us is largely Tesla's. The man was a pioneer who could make a fortune and spend it all on lavish experimenting and who died owning J. P. Morgan, John Jacob Astor, Austin Corbin and others several millions. All were so many rabbits in the intellectual clutch of this fascinating boar constrictor. Newspaper reporters, though they could not understand what he was talking about, were enthralled with his proposals to communicate with Mars and to transmit power without wires over vast distances. Tesla knew

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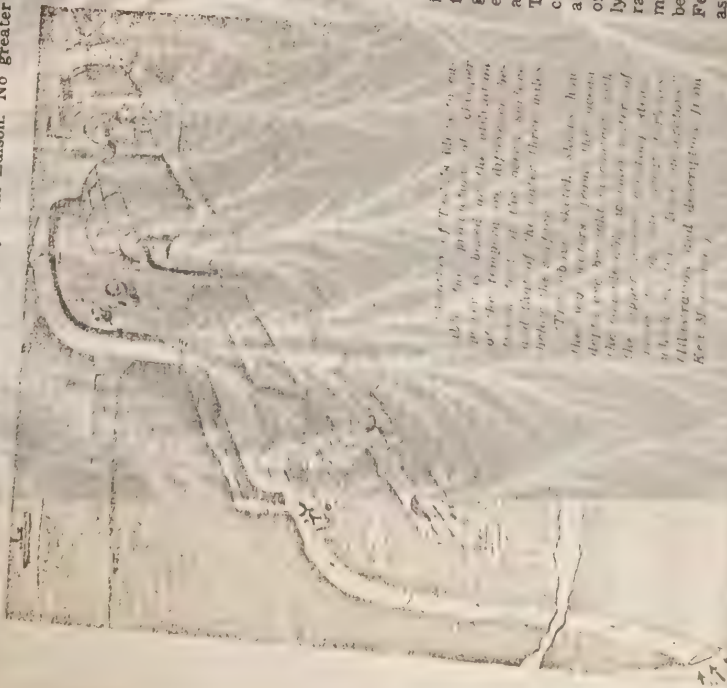
contrast can be imagined; Edison, as practical as an Irish foreman of a railway section gang, who affected to despise theorists and mathematicians, though he did not hesitate to employ them; the Serbian, a dreamer to whom most inventions were mere toys, his own included. No wonder the two parted.

Though he lived to be 85, Tesla crowded most of his inventive activity within twenty years. And what activity it was! Polyphase current engineering, the induction motor, the use of oil in transformers, radio, electric arcs fed by direct current in a magnetic field, gas-discharge lamps which were forerunners of Broadway's neon lights, the medical application of high-frequency currents—the record speaks for itself.

As a practiced popularizer of science, Mr. O'Neill, who is the science editor of The New York Herald Tribune, vividly and skillfully tells the story of this extraordinary personality. His interest in his subject is more than that of the ordinary biographer. He wrote poems to Tesla as a boy and when he made his acquaintance he sat enthralled at his feet. This biography has therefore much of O'Neill in it, which is one of its chief charms.

Because of this hero-worshipping attitude O'Neill gives Tesla far more than is his due. Tesla's great contribution to electrical engineering was his invention of alternating current machinery. Though O'Neill examines the claims of those who are regarded at least as independent inventors of this same machinery, especially the claims of Prof. Galileo Ferraris, he seems to this reviewer much too enthusiastic in Tesla's behalf. Nothing is said of S. Z. Ferranti, who in his way was just as remarkable as Tesla and who

(Continued on Page 22)



Portrait of Tesla by the artist, who has placed at the center of the drawing the difference between the two great scientists and that of the latter three miles. The above sketch shows how the way Tesla found the way to the truth, and in contrast with the way of the latter three miles. The sketch shows how the way Tesla found the way to the truth, and in contrast with the way of the latter three miles. The sketch shows how the way Tesla found the way to the truth, and in contrast with the way of the latter three miles.

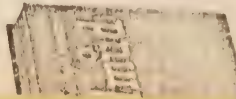
find evidence of the universal influence of new applications of physical science to technology; but such whole-hearted advocacy of such far-reaching proposals, supported by so many detailed illustrations, deserves respectful reflection even by those who will be quick to object to its underlying assumptions.

CONCERNING the use of air power in the preservation of peace, Messrs. Neville and Cleveland show a laudable readiness to go beyond the generalizations with which that subject is too often disposed of, and to come to grips with the question of how the "police force" would actually be used to meet specific emergencies. They accept it as probable that such a force will be created; they report the astonishingly exact conclusion that "the United States will be expected to contribute . . . 20,500 aircraft valued at \$2,785,400,000"; but they are not optimistic about the outcome. Weighing the pros and cons of such an organization in the scales of a commonsense historical memory, they see as all too easy the crumbling of the framework by the withdrawal of one or another of the great powers, for reasons of economy or mutual suspicion.

The portions of the book I have described fill the last three-quarters of its pages. The opening section is devoted to geography, with emphasis on the sphericity of the earth and the possibility of drawing misleading conclusions from maps based on the Mercator projection—issues which have been so heavily exploited in recent months as to have lost some of their freshness—and to a rather general discussion of some of the political problems of international air transport.

THE
Yonian

MUD



Edited
and
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from the
original
Hebrew
by

JO AUERBACH

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- Penalties
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AGAINST THE CURRENT. The Life
of Karl Heinzen. By Carl Wittke.
Chicago: University of Chicago
Press. 328 pp. \$3.75.

By GEORGE N. SHUSTER

AMERICA is, in part, the
handiwork of exiles. Nearly
a hundred years ago, after the
abortive revolution of 1848, the
first wave of political refugees
from Germany passed through
the formidable bottleneck of
Castle Garden. Many of them
were lovers of freedom, and some
served the major causes of the
time, particularly the Abolition-
ist movement. Perhaps the most
individualistic among them was
Karl Heinzen, for many years
editor of the vitriolic but uncon-
promisingly humanitarian Pio-
nier, memorable as one of the
landmarks of "radical" journal-
ism. Dean Wittke's biography of
this strange and able man is a
distinguished book, being scholar-
ly and objective as well as hu-
man and quite urbane.

Born in Duesseldorf while Na-
poleon was lord and master of
the Rhineland, Heinzen's mind
was fired by the ideals of the
French Revolution. He grew up
to be a most tempestuous re-
former, contemptuous on the one
hand of the religious and social
conventions to which his family
subscribed and vehemently hos-
tile on the other hand to the so-
cialistic Utopia advocated by
Marx and Lasalle. He held that
reason could solve life's problems
if only humanity gave it a
chance. The Germany he loved
must therefore clear the way for
the social application of reason
by becoming a republic of free
men. Naturally, it was often dif-
ficult to determine what "reason"
suggested in a given practical in-
stance. Heinzen quarreled with
his fellow-revolutionists of 1848,
finding for each of them an en-
less variety of picturesque names.

The Life of an Uncompromising Humanitarian

tirally dedicated to lost causes and
forlorn hopes is shown by the fact
that Heinzen championed equal
rights for women and for Ne-
groes. He was, of course, also a
resolute foe of slavery. Since he
was a very well educated man,
his views on the subject of scho-
lastic training are still worth
reading, even though he was far
more Rousseauistic than Rous-
seau. His standards of morality
were exceedingly high, divorced
though they were from religious
belief and based upon a system
of thought which he termed "ma-
terialism." On the other hand,
he was the sort of radical who
vehemently insisted upon govern-
mental action for things he be-
lieved desirable, but resisted with
equal force all encroachments
into spheres he defined as per-
sonal. Thus he advocated a
policy of punishment toward the
defeated South, but held that no
child ought to be compelled to go
to school. He demanded that the
State suppress the churches, but
advocated the public support of
temples in which the gospel ac-
cording to Heinzen should be
preached. Other immigrant
groups he was likely to refer to
with scornful contempt, while
holding that the right sort of
German was a precious Ameri-
can asset.

Possibly it is Heinzen's atti-
tude toward his native Germany
which is now of the greatest in-
terest. Until well past 1870 he
hoped that the republic of which
he had dreamed would be erected
and would embrace all the Ger-
man lands, including Austria. But
when his erstwhile countrymen
turned stuffy teagarts after the
defeat of France in 1870 and

doctely placed the Hohenzollerns
on the imperial throne, he fought
back with pamphlets, some of
which advocated tyrannicide.
Slowly he was compelled to admit
that what he had hoped for
would never come to pass. He
wrote that German chauvinism
was more detestable than the
French variety, "because it is fed
by servility and insolence."
Though his language was usually
bizarre and extreme, much that
he had to say was prophetic.

Dean Wittke says quite mod-
estly that Heinzen deserves a
biography if only because he is
the evidence that "once there was
a strong, liberal, cosmopolitan
group in the German states which

Nikola Tesla, Electric Sorcerer

(Continued from Page 6)

certainly built in London the first
commercial alternating current
station.

O'Neill believes so devoutly in
Tesla that he regards him as the
father of electrotherapeutics,
though D'Arsonval deserves fully
as much if not more credit for
the use of high-frequency cur-
rents in medical practice. There
is no doubt about Tesla's origi-
nality or about the grand way in
which he thought and acted, but
the phenomenon of simultaneous
and independent invention is so
well known that no physicist,
however accomplished, ever
stands alone.

Despite his extraordinary im-
agination, his profound knowl-
edge of science and his rare gifts,
Tesla remained a Victorian. When
the atomic physicist gave us the
electronic theory of matter and
Einstein relativity Tesla would

is the absolute antithesis of pres-
ent-day nazism." The reader will
agree that the debt has here been
paid in worthy fashion. Yet the
suspicion will not vanish that one
reason why the "liberal, cosmo-
politan" German group did not
succeed must be found in its tur-
bulent, cantankerous individual-
ism—a trait which was, alas!
quite as marked in the era imme-
diately preceding Hitler as it was,
apparently, in 1848. Heinzen's
Communist friends referred to
him as a "bourgeois democrat."
He retaliated in kind. Just that
sort of debate was in progress
prior to 1832, and one can only
suppose that it will be resumed
anew as soon as peace returns.

have none of them. He wanted
his infinite universe, his Euclid-
ean space, an ether which had
become preposterous even when
he was still in his prime. He
died, lonely and misunderstood,
leaving much of immense, prac-
tical importance but far more
which is no clearer to us than the
boasts of Paracelsus or the mys-
tical forebodings of a Nostrada-
mus.

O'Neill's book is the one full-
length biography and the one ap-
preciation of Tesla that we have.
An immense amount of work has
gone into its production. It does
honor both to Tesla and its au-
thor, and it ought to be read by
anyone who takes the slightest
interest in this highly electrified
world of ours. As for those nov-
elists who still believe that a
scientist is a wizard of the Mer-
lin type, they will find O'Neill's
Tesla made to order.

CS

2,000 ARE PRESENT AT TESLA FUNERAL

Cathedral of St. John the Divine
Is Scene of Yugoslav State
Function for Scientist

GREAT IN SCIENCE ATTEND

Ambassador Fotitch Heads the
Procession of Mourners—
Bishop Manning Assists

Inventors, Nobel Prize winners, leaders in the electrical arts, high officials of the Yugoslav Government and of New York, and men and women who attained distinction in many other fields paid tribute yesterday to Nikola Tesla, father of radio and of modern electrical generation and transmission systems, at an impressive funeral service in the Cathedral of St. John the Divine.

The service, conducted in Serbian by prominent priests of the Serbian Orthodox Church, was opened and closed by Bishop William T. Manning, assisted by Father Edward West, Sacrist of the Cathedral. The Serbian Orthodox Office for the Dead was said by the Very Rev. Dushan Shoukietovich, rector of the Serb Orthodox Church of St. Sava, who officiated in the name of the Serbian Orthodox Church in America.

City Is Represented

More than 2,000 persons attended the service. The city was represented by Newbold Morris, President of the City Council, who headed the list of honorary pallbearers. Other honorary pallbearers included Dr. Ernest F. W. Alexanderson of the General Electric Company, inventor of the Alexanderson alternator; Professor Edwin H. Armstrong of Columbia University, inventor of frequency modulation and many other important radio devices; Dr. Harvey C. Rentschler, director of the research laboratories, Westinghouse Electric and Manufacturing Company; Gano Dunn, president of the J. G. White Engineering Corporation; Colonel Henry Breckenridge, Dr. Branko Cubrilovich, Yugoslav Minister of Agriculture and Supply; Consul General D. M. Stanoyevitch of Yugoslavia and Professor William H. Barton, curator, Hayden Planetarium.

Fotitch Heads Procession

The funeral service was held at an official State function of the Yugoslav Government, which was officially represented by Constan-

tine Fotitch, Yugoslav Ambassador to the United States. Dr. Fotitch led the procession of mourners who passed the coffin before it was closed. Oscar Gavrilovitch, Yugoslav consul in New York, headed the list of ushers.

Many telegrams were received from officials of the United States Government, prominent scientists, literary men and many others. These included messages from Mrs. Roosevelt, on behalf of herself and the President; Vice President Henry A. Wallace, Professors Robert A. Millikan, Arthur H. Compton and James Franck, all Nobel Prize winners in physics; Professor William Lyon Phelps of Yale, Jean Piccard and Major Gen. J. O. Mauborgne, U.S.A., retired.

Mrs. Roosevelt's message read: "The President and I are deeply sorry to hear of the death of Mr. Nikola Tesla. We are grateful for his contribution to science and industry and to this country."

Vice President Wallace's message read as follows:

"Nikola Tesla, Yugoslav born, so lived his life as to make it an outstanding sample of that power which makes the United States not merely an English-speaking nation but a nation with universal appeal. In Nikola Tesla's death the common man loses one of his best friends."

Scientists Pay Tribute

Drs. Millikan, Compton and Franck paid tribute to Tesla as one of the world's outstanding intellects, who paved the way for many of the important technological developments in modern times.

Among the many floral offerings was a wreath from King Peter II of Yugoslavia; the Royal Yugoslav Government, Ambassador Fotitch and many Yugoslav societies.

Chief mourner was Sava Kosanovich, nephew of Dr. Tesla and president of the Eastern and Central European Planning Board, representing Yugoslavia, Czechoslovakia, Poland and Greece.

The body was taken to Ferncliffe Cemetery, Ardsley, N. Y., where it will be in the receiving vault until plans are completed.

CAPT. EDWARD B. WINN

SAN JUAN, Puerto Rico, Jan. 12 (AP)—Captain Edward B. Winn, United States Army Finance Officer at the San Juan departmental headquarters, died yesterday at the age of 52.

Other obituaries on preceding page.

Franck

NEW CLASSES TODAY

FRENCH — Wednesday, 6 to 8 p. m.
SPANISH — Wednesday, 7 to 9 p. m.
ITALIAN — Wed. & Fri., 8 p. m.

BERLITZ 630 Fifth Ave. Cl. 6-1416
SCHOOL OF LANGUAGES

Rockefeller Center (at 50th St.)
Same classes in Brooklyn, 86 Court St.

EDGAR PALMER

NIKOLA TESLA RITES TO BE HELD TUESDAY

Yugoslav Government - in - Exile Plans Official State Funeral

Nikola Tesla, father of radio and of the modern electrical transmission systems, who died Thursday night at the Hotel New Yorker at the age of 86, will receive an official state funeral under the auspices of the Yugoslav Government-in-Exile. It was announced last night by the Yugoslav Information Center.

The service will be held in the Cathedral of St. John the Divine on Tuesday at 4 P. M. Meanwhile the body will lie in state at the Campbell Funeral Church, Madison Avenue and Eighty-first Street.

Yugoslavia, where Dr. Tesla was born of Serbian parents, will be officially represented by Ambassador Constantin Fotitch and many present and former high officials of that country. Among them will be Dr. Ivan Shubashtich, Governor of Croatia; Dr. Bogoljub Jevtich, former Prime Minister of Yugoslavia; Branko Chubrilovich, Yugoslav Minister of Food Supply and Reconstruction; Franc Snaj, Minister of State representing the Slovenes, and Dr. Tesla's nephew, Sava Kosanovitch, president of the Eastern and Central European Planning Board, representing the Yugoslav, Czechoslovak, Polish and Greek Governments.

Held Patents on Transformers

Dr. Tesla, who held more than 700 basic patents, is regarded as the man who laid the foundations for modern radio broadcasting and television; for the giant electrical transformers and other transmission apparatus, and for the basic apparatus that makes possible neon lights and fluorescent illumination.

To the end of his days Dr. Tesla claimed that the Marconi system of wireless telegraphy was an infringement on his method and apparatus for transmitting energy without wires. Dr. Tesla brought suit against Marconi in an effort to gain legal recognition of his claim. He blamed his failure to establish his patent rights to the paucity of technical knowledge at that time on the difference between microwaves and short waves. When the distinction finally became clear the original Tesla patents had run out.

Nikola Tesla Dies At 85 Alone in His Hotel Suite

**Celebrated Inventor,
Born in Yugoslavia,
An Electrical Wizard**

Nikola Tesla, 85, inventor of the Tesla coil, the induction motor and hundreds of other electrical devices, died last night in his suite at the Hotel New Yorker. According to hotel officials, he had been in failing health for two years.

The world-famous inventor, who died alone, was found dead in bed by a maid. She called a hotel physician.

The hotel management started a search for friends or relatives. It was believed a nephew is living in the city but his whereabouts are not known.

Nikola Tesla was born in Smiljan, Yugoslavia, in July, 1859. His father, a Greek Orthodox Church minister, was a noted writer, orator, linguist and mathematician. His mother, Georgina Mandic, was an inventor.

Came Here in 1894.

Tesla studied at Gratz Polytechnic Institute and the University of Prague after preparatory work at the Realschule of Lika and Carlstadt. He came to the United States in 1894, and became a naturalized citizen.

In 1886 he designed the arc-lighting system. Two years later he invented the Tesla motor and designed a plan for the transmission of alternating current. The following year he presented plans for electrical conversion and distribution by oscillatory discharges.

His high frequency studies and development of the transforming coil bearing his name occurred from 1890 to 1891. From then up to 1900 his discoveries and inventions included such fields and appliances as wireless communication, electrical oscillation, radiant power and radioactive matter.

Communications and wireless power transmission occupied most of his research after that. He worked at the laboratories of Thomas Edison at Orange, N. J., specializing in motor design.

Fed Crumbs to Pigeons.

During recent years Mr. Tesla had been seen, but seldom recognized, on the steps of St. Patrick's Cathedral, in front of the Public Library and in Greeley Sq., invariably carrying a bag of crumbs which he fed to the pigeons.

Mr. Tesla's only military invention was a method to which he once alluded but never fully described. It was a means whereby an impenetrable "wall of force" could be reared about a nation's borders which would render helpless any military attack. He disclosed existence of the plan in 1934, and said he intended to present it to the Geneva Conference. He seldom referred to it afterward.

In 1936, when he was 80, he said his original plan to live to be 135 had been changed with the repeal of prohibition, and he would live to be 150 instead.

He was decorated by the Yugoslav and Czech governments. He wept when he met King Peter of Yugoslavia here last July.

NIKOLA TESLA, 86, PROLIFIC INVENTOR

Alternating Power Current's
Discoverer Dies in His
Hotel Suite Here

HIS 'DEATH BEAM' CLAIM

He Insisted the Invention
Could Annihilate an Army
of 1,000,000 at Once

Nikola Tesla, electrical inventor,
died last night in his suite at the
Hotel New Yorker.

According to the hotel staff, the
electrical engineer and designer,
who was 86 years old, had been in
failing health for two years. Of
vigorous temperament and with
emphatic ideas on personal health
as well as engineering, he had few
visitors, according to the hotel
management, which reported that
his meals, strictly vegetarian-style,
were especially prepared for him
by the chef.

"He made everybody keep at a
distance greater than three feet,"
a hotel executive recalled.

A spokesman for the hotel said
that Mr. Tesla died as he had spent
the last years of his life—alone.
He was found dead in bed by a
door maid at 10:45 P. M. She
called a house physician, who pro-
nounced him dead.

The New Yorker management
was attempting last night to locate
friends of the inventor. It was be-
lieved he had a nephew living in
this city.

Ideas Fantastic Toward End

Nikola Tesla's ideas bordered in-
creasingly on the fantastic as he ad-
vanced in years. On his seventy-
eighth birthday he announced in an
interview that he had invented a
"death beam" powerful enough to
destroy 10,000 airplanes at a dis-
tance of 250 miles and annihilate
an army of 2,000,000 soldiers instan-
taneously.

In his seventy-seventh birthday
interview he had no specific inven-
tion, but said he expected to live
beyond 140. The year before,
however, he spoke of two great im-
pending discoveries.

One, he announced, he
would be like the 100,000
of the Apocalypse. The
other, he said, was consensual, but it
was important. It will be
the first step with which Joshua's
army will fight down the walls of

He made his first practical
telephone repeater—in
Budapest, Mr.
Tesla had made about
any of them were of great
importance. These were nearly
all of the last twenty
years of the century.

Not Practical in Business.

He was heavily handicapped by
his. For he was anything
but practical. He was far as
concerned. It was
frequently victim-
ized. He was in to worry
he had a place to

He could have become
a chosen to be
of a large indus-
try. He preferred pow-
er. Early in 1887
Tesla Electric
Company was
financially
years he did not
nary to work in
experiments in hotel

He was the most im-
portant systems of alter-
nating trans-

NIKOLA TESLA
The New York Times, 1926

charges was devised the following
year, and in 1891 the now famous
Tesla coil, or transformer, was in-
vented.

Mr. Tesla devised a system of
wireless transmission of intelligence
in 1893, and this was followed by
mechanical oscillators and genera-
tors of electrical oscillations.

From 1896 to 1898 Tesla made re-
searches and discoveries in radia-
tions, material streams and eman-
ations.

Mr. Tesla received the Elliot
Cresson gold medal in 1902 in recog-
nition of his original work. It
presented before the Franklin In-
stitute and the National Electr-
ical Association.

In November, 1931, he published
designs of two power plants, one
utilize the heat below the surfa-
ce of the earth, the other to take
advantage of the difference betwe-
the upper and lower levels of a
ocean.

Preferred Ship to Society.

Shy of manner and ascetic in
tastes, Mr. Tesla preferred
workshop to society. He ne-
ver married. He ate sparingly
drank neither coffee nor tea
because he considered those be-
verages to be highly injurious. On
other hand, he ate a great deal
of food. He was a great lover of
life. It was said that he
until daylight. He then slept
for a few hours before resu-
ming his work.

At one time Tesla had the
financial backing of J. P. Morgan &
the elder. He built a tall
tower on Long Island to send
wireless power, but when his
er died no more money was
coming and the plan had
abandoned.

Mr. Tesla once owned a
tory on West 4th street, New
York, but it burned down and he
had another.

CAP. A. C. 350E

Ex-Off. Netherlands

—Was. Japan

MLL

(Neither)

Captain

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Eastern

turned to Mombasa

his release from a

ment camp, died

heart attack.

Captain, Kiof

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and the Netherlands

was seized and he

officers were

After twenty-one

years he did not

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He was the most im-

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Alternating Power Current's Discoverer Dies in His Hotel Suite Here

He Insisted the Invention
Could Annihilate an Army
of 1,000,000 at Once

Hotel New Yorker.

According to the hotel staff, the electrical engineer and designer, who was 86 years old, had been in failing health for two years. Of vigorous temperament and with emphatic ideas on personal health as well as engineering, he had few visitors, according to the hotel management, which reported that his meals, strictly vegetarian-style, were especially prepared for him by the chef.

A spokesman for the hotel said that Dr. Tesla died as he had spent the last years of his life—alone. He was found dead in bed by a floor maid at 10:45 P. M. She called a house physician, who pronounced him dead.

The New Yorker management was attempting last night to locate friends of the inventor. It was believed he had a nephew living in this city.

Idea: Fantastic Toward End

Nikola Tesla's ideas bordered increasingly on the fantastic as he advanced in years. On his seventieth birthday he announced in an interview that he had invented a "death beam" powerful enough to destroy 10,000 airplanes at a distance of 100 miles and annihilate an army of 1,000,000 soldiers instantaneously.

In his seventy-seventh birthday interview he had no specific invention, but said he expected to live "beyond 140." The year before, however, he spoke of two great imminent discoveries.

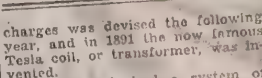
...he announced," he
...like the 100,000
...the Apocalypse. The
...other will be less sensational, but it,
...too, will be important. It will
...like the shout with which Joshua's
...army brought down the walls of
...Jericho."

O. Since he made his first practical telephone repeater—in Budapest, Mr. [redacted] to have made about [redacted] of them were of great [redacted] these were nearly [redacted] in the last twenty [redacted] past century.

Not Practical in Business.

Not Practical in Business
... handicapped by
... was anything
... man as far as
concerned. It was
was frequently victim-
d not seem to worry
he had a place to

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the Tesla Electric
of New York, but the
was not a financial suc-
For many years he did not
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experiments in hotel



Mr. Tesla devised a system of wireless transmission of intelligence in 1893, and this was followed by mechanical oscillators and generators of electrical oscillations.

From 1896 to 1898 Tesla made researches and discoveries in radiations, material streams and emanations.

Mr. Tesla received the Elliot Cresson gold medal in 1892 in recognition of his original work first presented before the Franklin Institute and the National Electric Association.

In November, 1931, he published designs of two power plants, one to utilize the heat below the surface of the earth, the other to take advantage of the difference between the upper and lower levels of the ocean.

ocean.

Preferred Sleep to Society.

Say of manner and taste in tastes. Mr. ... prepared workshop to ... He is married. He ... sparingly drank neither coffee nor tea because he ... those be cause he ... On other hand, ... used much of his other hand, ... to his moderation ... to his life. It was ... to his until day ... to his for a few ... to his this work.

At one time Tesla had the financial backing of J. Pierpont Morgan the elder. He built a tall tower on Long Island to send wireless power, but when his father died no more money was coming and the plan had been abandoned.

The abandoned. Mr. Tesla once owned a lorry on Houston Street, New York, but it burned down and he had another one.

CAP. A. C. KROE

Ex-Office of Netherlands
—Was. —Used by Japan

MELE (Nether

d by modore
thing lands
r as Eastern

turned to his home in Japan. His release from a Japanese detention camp, died yesterday of a heart attack.

Captain Kiefer, in the state of New York, and the Netherlands, was seized by the officers were jailed in York. After twenty-one days of under "difficult conditions," transferred to an internment where conditions were "somewhat better."

thirty three years, and
which was the first
Dutchman that had

Articles - 1100

...but a practical man as far as business was concerned. It was said that he was frequently victimized, but he did not seem to worry much as long as he had a place to work.

Tesla probably could have become a rich man had he chosen to become an employee of a large industrial concern, but he preferred poverty and freedom. Early in 1887 he had formed the Tesla Electric Company of New York, but the concern was not a financial success. For many years he did not even have a laboratory to work in, conducting his experiments in hotel rooms.

Of his inventions the most important were his systems of alternating current power transmission and distribution of electrical energy. His system of electrical conversion and distribution by oscillatory discharges was highly significant, as were his researches and discoveries in radiations, material streams and emanations.

After his discovery of a system of transmission of power without wires and a high-potential magnifying transmitter, Tesla had been chiefly engaged—since 1903—in the development of a system of telegraphy and telephony, and designing a plant for the transmission of power without wires, to be erected at Niagara.

As early as 1908 Tesla made it known that he was experimenting with interplanetary communication. He firmly believed that most of the planets are inhabited and that messages could be sent between the earth and Mars, Jupiter, Venus, &c.

He also had visions of harnessing the sun's rays and of utilizing the energy of the sea.

Son of Greek Clergyman.

Nikola Tesla was born at Smiljan, Lika, a border country of Austria-Hungary, on July 10, 1856. His father was a Greek clergyman and orator, and his mother, Georgina Mandic, was an inventor.

His education began with one year in elementary school and then four years of the lower Realschule at Gospie, Lika. Then he went to a higher school at Caristadt, Croatia, being graduated in 1873. He studied for four years at the Polytechnic School at Gratz, devoting most of his time to mathematics, physics and mechanics, and then had two years at the University of Prague, where he studied philosophy.

In 1881 he went to Paris, where he worked as an electrical engineer, and the following year he went to Strassbourg where he installed a mechanical plant. He was attracted to America by the remarkable progress in electrical energy, and came to this country in 1884.

For some time he worked with Thomas A. Edison at Orange, N. J., chiefly designing motors and generators. In a short while a proposal was made to him to start his own company. He accepted the terms and began by working up a practical system of arc lighting, as well as a potential method of dynamo regulation, which became known as the "third-brush regulation."

Invented Coil in 1891.

He also devised a thermomagnetic motor and other kindred devices. Soon after the Tesla Electric Company had been formed Mr. Tesla produced his epoch-making motors for alternating current, in which, going back to earlier ideas, he evolved machines having neither commutator nor brushes. This important invention came in 1888. His system of electrical conversion and distribution by oscillatory dis-

Eastern shipping line, who turned to Melbourne recently. His release from a Japanese internment camp, died yesterday heart attack.

Captain Kroef first knew if state of war existed between J and the Netherlands when his was seized and he and his officers were jailed in Yokohama. After twenty-one days of it under "fairly conditions," he transferred to an internment camp where conditions were "somewhat better."

He served with K. P. M. thirty-three years, twenty-five which were spent on the Singaj Netherlands East Indies-Austrian. Captain Kroef was in retirement in Sydney when the European war broke out, and re-entrained maritime service after the invasion of the Netherlands in 1940. His son, Jan, is serving with the Netherlands Navy.

MUHAMMAD HASSAN

Persian Prince of Former R House Dies in Exile at 4

Special Cable to The New York Times LONDON, Jan. 8.—Prince Muhammad Hassan of Persia, brother of the former Shah, Sultan Ali, and member of the Kadjar dynasty, collapsed in the street at Mahad today, dying while taken to a hospital. His age was 40. The prince, who proclaimed right to the throne in 1920, was Persian after the Riza Khan of 1925 and had lived in England since. Surviving are two sons, one of whom is in the British army.

Sultan Ahmed, the last of Kadjar dynasty, which had since been an exile, died for five years. His death had been an ex-Paris. The revolution in Riza Khan seized the throne.

ERNEST J. HOWE

Special to The New York Times FOURTHKEEPSIE, N. Y. J.—Ernest J. Howe, an assistant civil engineer of the New State Department of Public Works assigned to the Fourthkeepsie office, died today in the Veterans Hospital here at the age of 66.

Mr. Howe, who was born in Canton, Mass., and was graduated from the University of Maine, was a former chief engineer of Taconic State Park Commission. He entered the employ of the New York State Department of Engineers in 1906.

He leaves a widow, Mrs. Amy Howe.

SAMUEL W. TILDEN

MONTREAL, Jan. 7 (Canadian Press).—Samuel W. Tilden, who formerly was well known as an amateur boxer and basketball player in the United States and Montreal and was manager here for an Ottawa printing and lithographing firm, died yesterday at his home in neighboring Westmount at the age of 70. He was born in New York City and came to Montreal in 1901 as manager of Morling & Co., Ottawa printers. He leaves a widow.

the Spirit.—Ephesians, V., 18.

Prepared by Rev. J. A. Villelli, pastor of Sea and Land Presbyterian Church, Manhattan.)

HUMAN SIDE OF THE NEWS

By Edwin C. Hill

A Magician in Science.

TO the moon with America's greatest living inventor, Nikola Tesla! Well, not precisely—though if Father Time were to grant Mr. Tesla another half century or so of life I, for one, wouldn't bet against the moon adventure under his eager auspices. The man has lived long and wrought greatly, and the keenest desire of his life is to live longer and materialize the dreams which haunt his scientist's imagination.

He is working now on an energy-transmitting device to project electrical waves to Lady Luna, waves of such potency and power that a tract of light as large, perhaps, as the State of Connecticut could be fixed momentarily upon the surface of the moon.

If he lives long enough he will do it, and that's a fairly safe prediction, for Dr. Tesla has accomplished many marvels in his 82 years upon this earth.

His birthday falls on July 10, and finds him in fair health for one of his years.

It was 46 years ago, B. M., Before Marconi, that Nikola Tesla predicted the coming of radio communication and sent electrical waves racing around the globe from high voltage generators.

Another dream of this truly great scientist is to perfect what we laymen might call a "magic ray" which would protect ships from the mariner's greatest peril, fog, and bring them unfailingly to port. It might indeed—so far does his dream range out over the troubled field of human life—put an end to war. A magic ray so terrible, so powerful that raiding airplanes could not last one second above their designed victim of a city.

Mr. Tesla lives, and dreams and works at a New York hotel and there, usually, you may find him upon any proper business—amiable, charm-



EDWIN C. HILL

ingly conversational, intensely interesting with his glimpses of new marvels and promises of a new world. He is the only American inventor with 750 basic patents to his credit—the only inventor who ever lived, so far as this writer knows, who ever explored so many fields with patented results to prove his roving and wanderings. Half the civilized nations of the world have honored him with orders and medals.

Nikola Tesla is an Austrian. He was only 28 years old when he came from the University of Prague to enter the laboratory of the great Edison. That was the beginning of an amazing career. For more than 50 years he has been a man of magic. Full-fledged from his amazing brain have come marvel after marvel. He gave us the induction motor which made possible alternating electric current. He gave us innumerable indispensable electrical appliances. His imaginative mentality reaches out into the hereafter itself. He wonders if life cannot be recalled—as to whether a man electrocuted in the death chair could be restored to life by the application of an electrical current. He really thinks it could be done.

It was 30 years ago, on Pike's Peak, that he is sure he plucked from the air at that 14,000 foot height signals from the planet Mars. Mr. Tesla believes, as the late Prof. Lawrence Lowell believed, that there are living, humanlike creatures on our nearest neighbor in the family of planets, and much more intelligently advanced than we are. He thinks that they have been trying for many centuries to reach our dull intelligences.

Now, at 82, Nikola Tesla is working not only on an apparatus to prove unfailing communication, to insure safety of ships, to locate hidden treasure and to determine the earth's physical constants, but also on a means to end war. Mr. Tesla is reaching into the infinite to snatch a bolt of lightning for the salvation of mankind. It is to be the Tesla death beam—literally a lightning bolt. It will have such a terrific energy that a thousand invading airplanes could be sent earthward in flaming fragments within ten heartbeats—annihilated. Two hundred thousand men, horse, foot and artillery, crossing the border of a defenseless enemy could be dropped dead in their tracks.

MARCH OF EVENTS

By Benjamin DeCasse

TESLA EARTHQUAKE

Mr. Weyant, Editor, Scientist's
Test in the Year 1908.

To the What Do You Think Editor:
Sir: Answering the query of

issue of the twenty-second, re the
demonstration by Nikola Tesla: In
my extensive files re Houston street
and an item of July 11, 1935,
from the Brooklyn Times Union,
entitled "Scientist Tesla Reveals
Self as Earthquake-Maker: Started
Houston Street Tomblors 37 Years
Ago; Could Shake Down Whole
City." It is too long to quote, but
the date is probably what concerns
me. In August, 1908, would be the
date when Tesla started the Hous-
ton street earthquake, and probably
he had occupied his laboratory for
years before that. And The New
York Sun of July 11, 1935, carried
three pictures of Tesla.

MORRISON V. R. WEYANT.

MAN'S GREATEST ACHIEVEMENT

By Nikola Tesla.

From birth its sense-organs are brought in contact with the outer
world of sound, heat and light, beat upon its feeble body, its sensitive
nerves, the muscles contract and relax in obedience: a gasp, a breath,
a marvelous little ensire, of inconceivable delicacy and complexity
unlike any on earth, is hitched to the wheelwork of the Universe.
The little being labors and grows, performs more and more involved operations, be-
comes sensitive to ever subtler influences and now, there manifests itself in the
fully developed being - Man - a desire mysterious, inscrutable and irresistible: to
imitate nature, to create, to work himself the wonders he perceives. Inspired to
this task he searches, discovers and invents, designs and constructs, and covers with
monuments of beauty, grandeur and glory the world of his birth. He descends into the
bowels of the globe to bring forth its treasures and to unlock its immense
imprisoned energies for his use. He explores the dark depths of the ocean and the
azure regions of the sky. He peers into the innermost nooks and recesses of
molecular structure and lays bare to his eyes worlds infinitely remote. He subdues
and puts to his service the fierce, devouring spark of Prometheus, the titanic
forces of the waterfall, the wind and the tide. He tames the thundering bolt of
Jove and annihilates time and space. He makes the great Sun itself his obedient
toiling slave. Such is his power and might that the heavens reverberate and the whole
earth trembles by the mere sound of his voice.

What has the future in store for this strange being, born of a breath, of per-
ishable tissue, yet immortal, with his powers fearful and divine? What magic will
be wrought by him in the end? What is to be his greatest deed, his crowning achieve-

TESLA HAS PLAN TO SIGNAL MARS

Scientist, 81 Years Old,
Celebrates Birthday.

DECORATED BY 2 COUNTRIES

Seeks Guzman Prize for Idea on
Planet Communication.

Nikola Tesla is 81 years old. Some reference books, including "Who's Who," fix the year of his birth at 1857. He does not know whether the anniversary should have been celebrated Friday or, as it was, on Saturday, because it was just at midnight between July 9 and July 10 that he was born. But the year was 1856.

It was a most unusual birthday party the inventor held at the Hotel New Yorker, where he makes his residence. For the Ministers of his native Yugoslavia and neighboring Czechoslovakia and their staffs, and a handful of newspaper men, Dr. Tesla had provided a most unusual material and mental feast.

Figuratively, at least, they are still smacking their lips today over the food and wines and speculating about what may come from the discoveries the scientist announced, his quest for the French Academy prize for interplanetary communication, the perfection of a tube to carry immense electrical voltages, and some of the more abstract observations regarding cosmic rays and what makes this universe of ours expand and contract, oscillating instead of always expanding as some physicists hold.

Considering his years and the fact that recently he was the victim of an automobile accident which shook his system seriously, Dr. Tesla is exceedingly vigorous. His thinning hair, although predominantly white, still has considerable black. His eyes are as keen and penetrating as ever. He speaks distinctly although, of course, was a bit of the accent he has always had. But he picked up questions quickly and answered them in a manner that showed a tremendous grasp of all the latest theories of the astronomers, physicists and other scientists.

Announces Discoveries.

In recent years Dr. Tesla has made a habit of announcing on his birthdays some of the discoveries he has made in the past year. And he feels that with the passing of the years they have increased in importance. He said: "The maximum power of man is reached in his age rather than in his prime, as many suppose. Every one should have a decade to sum up the work of his lifetime after he reaches the age of seventy-five. By then, if he has worked constantly in one field, he has gained so much experience that the solution of problems becomes much easier."

Everything at the birthday party was designed to lead up to the discussion of the inventor's latest achievements. Although he tasted only two of the courses and refrained altogether from any drink but water, he treated his guests to the finest in foods and wines.

The piece de resistance was "Carnard en casserole a la Tesla," a dish he had planned himself about ten years ago, consisting of duck roasted slowly in a casserole, smothered with whole stalks of celery. It won unstinted praise from the diplomatic representatives.

Dr. Tesla did take just a taste of this dish to make certain that it had been properly prepared and, as a sign of his approval had the chef come in to receive the applause of

He gave little glimpses of his boyhood life in Smiljan. One gathering he had acquired much of his genius from his learned father, a Slavonian priest, and his mother, a practical and also a brilliant woman.

When, in 1884, Dr. Tesla landed at the Battery he had just 4 cents. He had only some a few blocks up Broadway when he saw some men sweating over an electrical machine that had broken down.

"It was a machine I had helped to design, but I did not tell them that," Tesla said. "What is the matter?" and they said, "This thing won't work." I asked, "What would you give me if I fix it?" Twenty dollars was the reply. I took off my clothing and went to work. I had it running perfectly in an hour and had earned \$20."

He shortly found it was not all as easy as that. There were many days when he did not know where the next meal was coming from. But I was never afraid to work. I went in where some men were digging a ditch. I said I wanted to work. The boss looked at my good clothes and white hands and he laughed to the others, "This man wants to work." But he said, "All right, spit on your hands. Get in the ditch. Go to work." And I worked harder than anybody. At the end of that day I had \$2. And I kept it up until I had enough to get started again."

Support Bums Today.

"Could that happen today?" he was asked. "There was a serious pause, a grave frown and he said, 'I am afraid not. The present is destructive. The workers are expected to support the bums.'"

Before the birthday cake was cut Dr. Tesla was invested with the orders which Yugoslavian and Czechoslovakian ministers had brought. Dr. Constantin Fotitch, Yugoslavian Minister, who was attended by R. Petrovich, first secretary of his legation, and B. P. Stoyanovich, the Consul General here, bestowed the Grand Cordon of the White Eagle in behalf of King Peter.

Dr. Tesla sharply recalled those physicists who contend that cosmic rays originate in far places of the universe where matter is converted into energy. He produced a formula saying "The kinetic and potential energy of a body is the result of motion and determined by the product of its mass and the square of its velocity. Let the mass be reduced, the energy is diminished by the same proportion. If it be reduced to zero, the energy is likewise zero for any finite velocity."

About half of his talk was devoted to abstract scientific problems.

Turning from the more metaphysical aspects of his studies to the practical, Dr. Tesla disclosed his greatest ambition is to be the man who evolved a method of communicating with other planets. He thinks he has found the answer and is preparing to lay its formula before the Institute of France in quest of the Pierre Guzman prize of 100,000 francs offered for a means of communicating with other worlds.

The man who accomplishes this, he feels, will be remembered after all present inventions are forgotten.

Streamlined Train Takes Elks to Denver

DENVER, July 12 (A. P.).—The Denver Rocket, a Rock Island streamlined train, concluded its maiden trip at 11:35 P. M. yesterday, bringing a delegation of Chicago Elks to the national convention here.

The train, an 1,800-horse power motor pulling three cars, left Chicago at 7 A. M., making the trip in 16 hours and 35 minutes.

residence, for the Ministers of his native Yugoslavia and neighboring Czechoslovakia and their staffs, and a handful of newspaper men. Dr. Tesla had provided a most unusual material and mental feast. Figuratively, at least, they are still smacking their lips today over the food and wines and speculating over what may come from the discoveries the scientist announced. His quest for the French Academy prize for interplanetary communication, the perfection of a tube to carry immense electrical voltages, and some of the more abstract observations regarding cosmic rays and what makes this universe of ours expand and contract, oscillating instead of always expanding as some physicists hold.

Considering his years and the fact that recently he was the victim of an automobile accident which shook his system seriously, Dr. Tesla is exceedingly vigorous. His thinning hair, although predominantly white, still has considerable black. His eyes are as keen and penetrating as ever. He speaks distinctly although, of course, was a bit of the accent he has always had. But he picked up questions quickly and answered them in a manner that showed a tremendous grasp of all the latest theories of the astronomers, physicists and other scientists.

Announces Discoveries.

In recent years Dr. Tesla has made a habit of announcing on his birthdays some of the discoveries he has made in the past year. And the years they have increased in importance. He said: "The maximum power of man is reached in his age rather than in his prime, as many suppose. Every one should have a decade to sum up the work of his lifetimes after he reaches the age of seventy-five. By then, if he has worked constantly in one field, he has gained so much experience that the solution of problems becomes much easier."

Everything at the birthday party was designed to lead up to the discussion of the inventor's latest achievements. Although he fasted only two of the courses and refrained altogether from any drink but water, he treated his guests to the finest in foods and wines.

The piece de resistance was "Cassard en casserole a la Tesla," a dish he had planned himself about ten years ago, consisting of duck roasted slowly in a casserole, smothered with whole stalks of celery. It won unstinted praise from the diplomatic representatives.

Dr. Tesla did take just a taste of this dish to make certain that it had been properly prepared and, as a sign of his approval had the chef come in to receive the applause of his guests. The other dish of which he partook was a jellied consommé.

Alcohol, he believes, is a great thing. Whisky and wine are preferable to coffee and tea. As his guests smacked their lips over some of the vintages he had brought forth for the occasion, they were disposed to agree with Dr. Tesla on this point.

Genius From Parents.

It was in the random conversation of the meal that one learned many intimate things about Dr. Tesla.

the end of that day I had \$2. And I kept it up until I had enough to get started again."

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7

DAILY NEWS, CHICAGO, ILLINOIS

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FRANK KNOX
Editor and Publisher

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MONDAY, JULY 15, 1935

Average daily return for the year 1934
 deducting all unpaid

says the commutator, which made it possible for the dynamo to deliver direct current, was not only necessary, but had become a sacred technical cow. Without it there could be no direct current from the dynamo, and science knew not how to handle the other kind.

... Tesla devoted years to knocking these commutators off the generator. To do this he had to develop an entirely new technology to make alternating current useful.

Did he succeed? Look about you!

PUZZLE STORIES IN STAMPS
ELECTRIC WIZARD

SOME scientists scoff at him for his attitude. The "So, let's let it go" attitude is a common one among scientists, and it is a good one. But it is not the only one. There are many other attitudes, and many of them are just as valid. For example, some scientists believe that the world is a machine, and that it can be understood by studying its parts. Others believe that the world is a living organism, and that it can be understood by studying its behavior. And still others believe that the world is a mystery, and that it can only be understood by faith.

...the people of the
magnetic field, and since he has
working on other ideas, which
seem so futile as to cause
more non-creative scientists to
ridicule him. Yet, while he dis-
misses his secrets of a proposed
death ray, or a mysterious source
of new power, or the photography
of thought, he also scoffs at Ein-
stein's theory of relativity and
the general belief that the

sun is cooling
off gradually.
Recently, on
the occasion
of Tesla's 80th
birthday, Yugo-
Slavia is-
sued a set of
four stamps
picturing the
scientist.

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The Globe Trotter of Haverhill

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SIGNALS FROM MARS

... was conducting experiments at Pikes Peak, that he had been licensed from the air at the 1970-1971 season, and that signals from the

late Prof. Zuck. 1901

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It would be

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do who has worked such won-
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and who stands today as
America's greatest inventor.

ONCE

middle aged men who
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younger years in having a good

They should remember that
tempted to grumble.
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dedicated to savings and self-
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is a relief to hear certain fellows say: "Well, I had a time during the years when physically fit."

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Aug 10, 1935

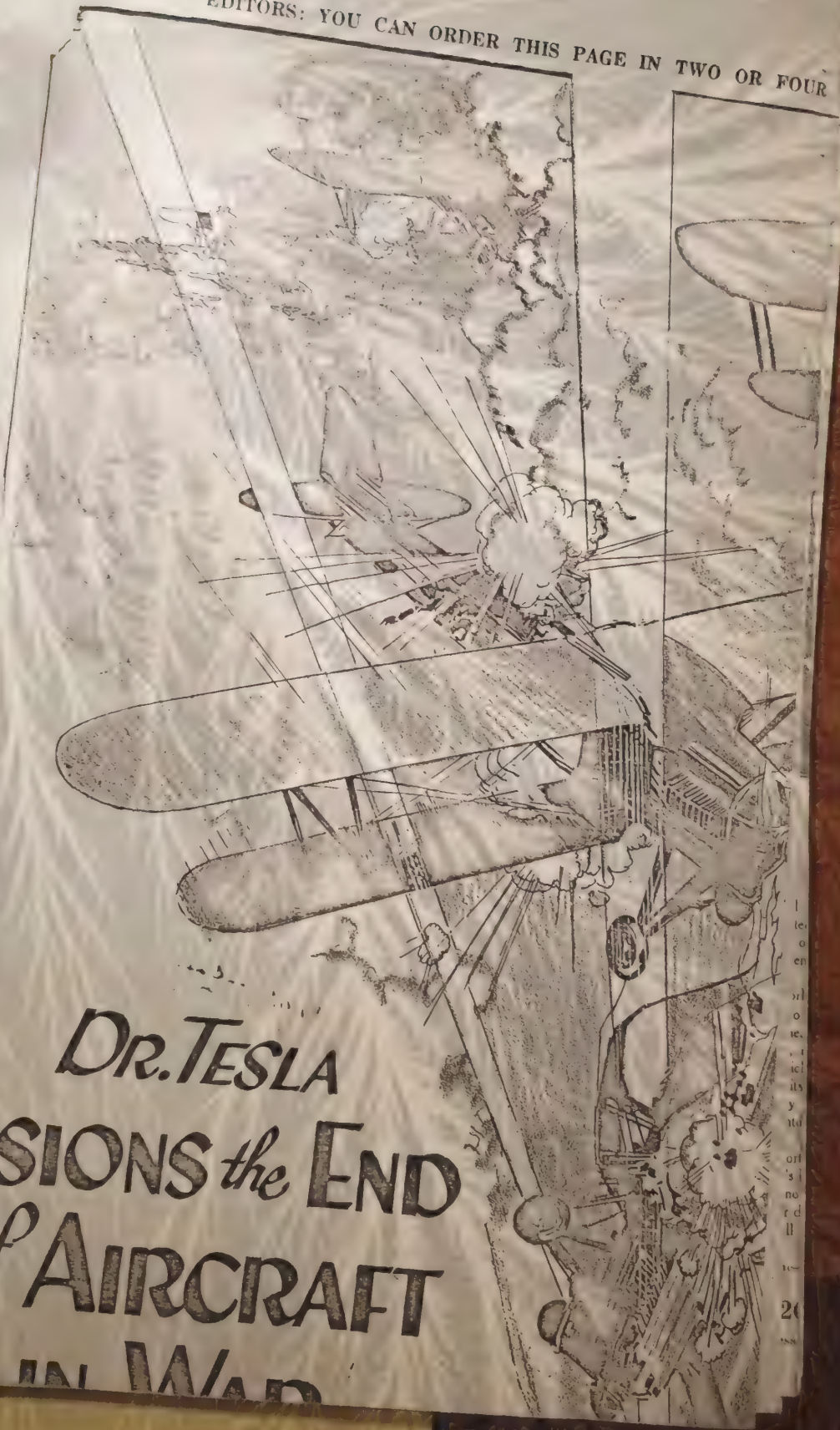
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N.Y. Tribune, Aug. 18, 1935 CS

EDITORS: YOU CAN ORDER THIS PAGE IN TWO OR FOUR

DR. TESLA
VISIONS *the* END
of AIRCRAFT
IN WAR



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"The battleships will ride to sea safe from air raids, for they will be equipped with smaller plants for generating a beam of sufficient power to destroy any attacking airplane. But they will not be permitted to come near the shore of a protected country and attack it with any chance of success."

"The nation which has the best equipped battleships, however, will gain the supremacy of the seas. Submarines will be obsolete, for the methods of detecting them will be perfected to such a degree that there will be no longer any advantage in submerging."

Voltages never before attained, of 50,000,000 volts or more, will have to be applied. The man who is responsible for so many discoveries and improvements has devoted his entire life to his scientific pursuits. Tall, lean, reserved, his path goes between the two small laboratories and the various manufacturing plants with which he has contact.

Born in Yugoslavia, Tesla comes from a race of inventors. "On my mother's side, for three generations, almost all members of the family were inventors," he says. "My mother was Carolina Mandic, who was noted as an inventor of household appliances. One of the things which she perfected was her own sewing machine."

"Her family can be traced back to the seventh century, to the historical records. My grandfather was an officer in Napoleon's army."

TESLA began to invent at the age of six. As he grew up his interest focused in the laboratory. "I sleep about one and one-half hours a night," the inventor says. "I think that is enough for any man. When I was young I needed more sleep. But age doesn't require so much. There are so many things to do I do not want to spend time sleeping needlessly. In my family all were poor sleepers. Time spent in sleep is lost time, we always felt."

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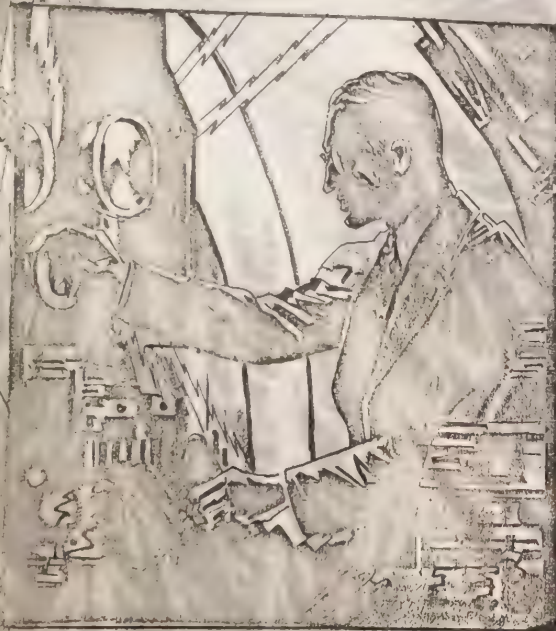
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An artist's conception of the way a technician, sitting in one of Dr. Tesla's great generating plants, would use the new beam to destroy hostile airplanes.

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...Week Magazine—Printed in U. S. A.)

When a submarine is located the beams will function under water, though not quite so effectively as in air."

FOUR new inventions of Dr. Tesla are involved in the creation of the beam.

"Briefly, the first comprises a method and apparatus for producing rays and other manifestations of energy in free air, eliminating the high vacuum heretofore indispensable," he explains.

"The second one is the process for producing electrical force of immense power.

"The third method amplifies the process, and the fourth produces a tremendous electrical repelling force."

In times of peace such a plant can be used to transmit power in any amount up to its full capacity and to any place on the earth visible through a telescope, according to its inventor.

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"It doesn't require much room. There is a platform on which the person stands. He turns on the current. Instantly all foreign material such as dust, dandruff, scales on the skin and microbes is thrown off from the body. The nerves, too, are exhilarated and strengthened. The 'bath' is excellent for medical as well as for cleaning purposes."

However, the war picture gives the master inventor more satisfaction than the minor inventions. He is rejoicing because his instrument of death will save millions of lives and inestimable property.

His only regret is that there may be another war before the discoveries he has made have been placed before the Disarmament Conference at Geneva, and generally adopted by the nations of the world.

"The next war, and I am afraid that there will be one before long," he says, "will be fought in the air. But if the beam is adopted war in the air will cease.

"Whatever battles there are thereafter will be confined to the sea. But no nation will dare to attack another nation when every country is armed. There will be a general feeling of safety throughout the world."

October 20-21, 1934. In Ordering Mat Designate Page 3, OCTOBER 21

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DR. TESLA VISIONS the END of AIRCRAFT IN WAR

By Helen Welshimer

"A MERICA Enters War!"
"United States Joins Allies!"
"Congress Declares War!"

The newboys were screaming the headlines through the rainy April night. Men and women stood on corners, talking, talking, talking—
The drift of the days went on. Troop trains pulled out of the stations, from Centerville, Mississippi, up to Bangor, Maine. The drums throbbed and the trumpets blew. The ships sailed and the casualty lists came back. One by one the gold stars replaced the white—
And 1917 drifted into 1918.

Dr. Nikola Tesla was in his laboratory trying hard to solve a problem of ages. Once in a while he raised his head to listen. Then he turned back to his experiments. He was going to end war!

The noted inventor, 78 years old now, already had 700 inventions to his credit. This was to be his greatest.

Years marched on. The fanfare and the drums were done. The dead were buried. The living came home.

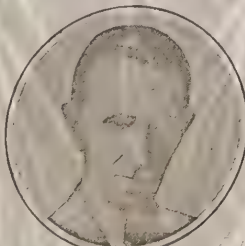
NOW, 15 years after the war has ended, Tesla, one of the greatest inventors of all time, has announced that his invention to end all wars, by a perfect means of defense which any nation can employ, is ready. Soon, he says, he will take it to Geneva to present it to the Peace Conference.

Whether it is a dream or reality may soon be known. He claims to have created a new agent, silent and invisible, which kills without trace and yet pierces the thickest armor. It is a beam of death and destruction formed of minute particles of matter carrying such tremendous energy that they could bring down a fleet of 10,000 attacking planes and wipe out an army of millions at a distance of 250 miles.

"The invention," says Dr. Tesla, "will make war impossible for it will surround any country using this means with an impenetrable, invisible wall of protection. Plants for the

generating of this beam will be erected along the coasts and near cities. One plant will afford perfect safety within an area of 40,000 square miles.

"The beam will be effective at any distance at which the object to be destroyed can be perceived through a telescope. Every country will have to adopt this invention, for without it a nation will be helpless.



Dr. Nikola Tesla.

"The beam, intended chiefly for defense, will be projected from an electric power plant, ready to be put in action at the first sign of danger. The cost of operation will be insignificant, as the plant is chiefly intended for use in emergency. But to make the investment profitable in times of peace it may be commercially employed for a number of purposes."

Dr. Tesla wishes it to be understood that the means he has perfected has nothing in common with the so-called "death ray."

"It is impossible to develop such a ray. I worked on that idea for many years," he says, "before my ignorance was dispelled and I became convinced that it could not be realized. This new beam of mine consists of minute bul-

lets moving at a terrific speed, and any amount of power desired can be transmitted by them. The whole plant is to the present."

THE picture of a protected world, in which men will devote their time to pursuits of peace, is a strangely beautiful one.

Imagine the map of the world, every country surrounded by the nation itself and its absolute protection. Only ships flying white flags of peace can sail into a foreign harbor.

The power plants resembling forts placed at strategic distances at a country's border, will be on guard. They are immovable, they will constitute even a possible means for defense, and by making invasion impossible will greatly advance the cause of peace.

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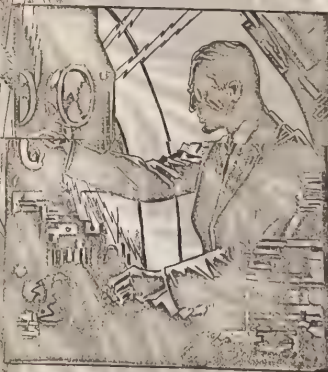
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Whether it is a dream or reality may soon be known. He claims to have created a new agent, silent and invisible, which kills without trace and yet pierces the thickest armor. It is a beam of death and destruction formed of minute particles of matter carrying such tremendous energy that they could bring down a fleet of 10,000 attacking planes and wipe out an army of millions at a distance of 250 miles.

"The invention," says Dr. Tesla, "will make war impossible for it will surround any country using this means with an impenetrable, invisible wall of protection. Plants for the

generating of this beam will be erected along the coasts and near cities. One plant will afford perfect safety within an area of 40,000 square miles.

"The beam will be effective at any distance at which the object to be destroyed can be perceived through a telescope. Every country will have to adopt this invention, for without it a nation will be helpless.



Dr. Nikola Tesla.

"The beam, intended chiefly for defense, will be projected from an electric power plant, ready to be put in action at the first sign of danger. The cost of operation will be insignificant, as the plant is chiefly intended for use in emergency. But to make the investment profitable in times of peace it may be commercially employed for a number of purposes."

Dr. Tesla wishes it to be understood that the means he has perfected has nothing in common with the so-called "death ray."

"It is impossible to develop such a ray. I worked on that idea for many years," he says. "Before my ignorance was dispelled and I became convinced that it could not be realized. This new beam of mine consists of minute bul-

lets moving at a terrific speed, and any amount of power desired can be transmitted by them. The whole plant is incomparably superior to the present."

THE picture of a protected world, in which men will dwell in peace, is a strange, fascinating one.

Imagine the map of the world, every country surrounded by a plant which will offer absolute protection. Only ships flying white flags of peace can still into a foreign harbor.

The power plants resembling forts placed at strategic distances from a country's border, will be on guard. They are immovable, they will constitute even a means for defense, and by making invasion impossible will greatly advance the cause of peace.

(Copyright, 1934, by Henry Mark Magazine—Printed in U. S. A.)

The famous inventor's new beam of death could bring down a fleet of 10,000 planes at a distance of 250 miles, he claims, and it also would make obsolete the submarine

occasionally, nations decide that they must have war for the thrill of a ducking drum and a singing bugle, it can be staged on the sea. Dr. Tesla says. Navy experiments will launch aircraft.

The airplane will cease to be used as a means of offense," the great inventor explains. "It will be used merely for peace and should be. An airplane, however, the very nature of its construction, can not carry with it a sufficient amount of power to become dangerous with a single shot. A projected beam of death.

Less battleships will ride to sea safe from an enemy, for they will be equipped with smaller plants for generating a beam of sufficient power to destroy any attacking airplane. But they will not be permitted to come near the shore of a protected country and attack it with any chance of success.

"The nation which has the best equipped battleships, however, will own the supremacy of the sea. Submarines will be obsolete for the methods of detecting them will be perfected to such a degree that there will be no longer any advantage in submerging

ships never before attained, of 50,000,000 watts, will have to be applied.

Dr. Tesla, who is responsible for so many improvements in the scientific world, has devoted his entire life to his scientific pursuits. Tall, lean, reserved, his path goes between the two small laboratories and the various manufacturing plants with which he has contact.

Born in Yugoslavia, Tesla comes from a race of inventors.

From his mother's side, for three generations, almost all members of the family were in science. He says. "My mother, Mrs. Cora Tesla, was noted as an inventor of household appliances. One of the things which she perfected was her own sewing machine. Her family can be traced back to the nineteenth century, in the historical records. My grandfather was an officer in Napoleon's army."

TESLA began to invent at the age of six. As he grew up his interest focused in the laboratory.

"I sleep about one and one-half hours a night," the inventor says. "I think that is enough for any man. When I was young I needed more sleep. But age doesn't require so much. There are so many things to do I do not want to spend time sleeping needlessly. In my family all sleep very soundly. Time spent in sleep is lost time, we always felt."

Tesla, busy with his 700 inventions, never had time for marriage. He never had a girl in his young days. He never had a romance. There was no leisure for them.

His diet is simple. He lives chiefly on vegetables, cereals and milk. The meat is potatoes occasionally. Whites of eggs and milk complete the diet. There is no meat on his vegetable plate. He never smokes or tastes tea, coffee, alcoholic beverages or any other stimulant.

While he is perfecting the beam which will defend nations from attack, the inventor is playing with other ideas. He goes from one to the other, he says, as this or that gains paramount interest or some new clue is suggested.

"BUT what is giving me more fun than anything I have done for a long, long time," Dr. Tesla explains, "is an electric beam which I hope to have ready for general use very soon."

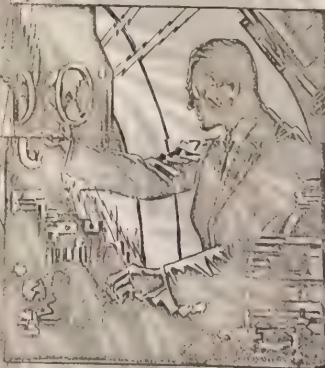
"It doesn't require much room. There is a platform on which the person stands. He turns on the current. Instantly all foreign material such as dust, dandruff, scales on the skin and microbes is thrown off from the body. The nerves, too, are exhilarated and strengthened. The 'bath' is excellent for medical as well as for cleaning purposes."

However, the war picture gives the master inventor more satisfaction than the minor inventions. He is rejoicing because his instrument of death will save millions of lives and inestimable property.

His only regret is that there may be another war before the discoveries he has made have been placed before the Disarmament Conference at Geneva, and generally adopted by the nations of the world.

"The next war, and I am afraid that there will be one before long," he says, "will be fought in the air. But if the beam is adopted war in the air will cease."

"Whatever battles there are thereafter will be confined to the sea. But no nation will dare to attack another nation when every country is armed. There will be a general feeling of safety throughout the world."



An artist's conception of the way a technician, sitting in one of Dr. Tesla's great generating plants, would use the new beam to destroy hostile airplanes.

When a submarine is located the beams will function under water, though not quite so effectively as in air."

FOUR new inventions of Dr. Tesla are involved in the creation of the beam.

"Briefly, the first comprises a method and apparatus for producing rays and other manifestations of energy in free air, eliminating the high vacuum heretofore indispensable," he explains.

"The second one is the process for producing electrical force of immense power."

"The third method amplifies the process, and the fourth produces a tremendous electrical repelling force."

In times of peace such a plant can be used to transmit power in any amount up to its full capacity and to any place on the earth visible through a telescope, according to its inventor.

Signature Marvels

Dr. Stenger
of New Orleans

By N. Sutherland.
On 11th inst. Motion to General.
James A. Sutherland, the well known
comedian, is making a tour
Farley is now in the city and
the county precincts. He will
may hear—During Mr. Farley's
long period in office, securing two
successful terms as Governor of New

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... which will
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... there is absolutely no
... or experimental evidence
... expectation.

thought and the laundry dry. Still, for our own common of the world. The old inter-
were powerful and needed to find
any encroachment on their. But
by all means fair or foul. But
inhouse was the energy and resour-
threw a battle of the century. A
than once he came near to be
snuffed out, but finally he
his opponents and the new
dust on a triumphant unpa-
a monument to achievement unpa-
the history of technical
to man. The service he ren-
to the world is beyond estimate.

At present the work of Women's Home and Hall is carried further every corner of the globe, providing new resources, transforming old ones, transmuting and contributing to the comfort and convenience of hundreds of millions. Let us be sure that these great plans are carried out in our time, as otherwise

might have had to wait a century
for benefits we now enjoy.

[illegible]

Asking the Churchgoers for Added Contribution

By Patrick F. Scanlan, Manager
for the Brooklyn Tablet.

Mr. Stiezel asked the church to give \$2,500,000 a year for relief. I showed them that more than that now. Mr. Stiezel said the churches are expected to give \$10,000,000 of taxes. I replied that it was four or five times that amount. He replied by repeating his demand.

John Jones on my blood-crediting said that the church every Sunday is contributing \$100,000,000. I told him he gives approximately one year to unemployment relief to the upkeep of the parsonage. This \$40 represents the amount to public welfare. I said that the next door to the church is the unemployment office. I said that the church should contribute to unemployment relief through the church or to the work.

Mr. Stiezel's suggestion was that I later contribute and that the former give me is already giving. It is a double-headed, unreasonable Brooklyn.

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Farley is now a member of the county board. During his long period in office, embracing two successful terms as Governor of New

WORLD TELEGRAM
JULY 24, 1934

65

~~You launch an attack in an area where there was no previous action.~~

NEW YORK

Herald



THE WEATHER

Today: Fair and warmer

Tomorrow: Fair and warmer,
relieved by showers

Maximums Yesterday: Max. 73, Min. 67

Detailed Report on Page 24

Vol. XCIV No. 32,014

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New York Tribune Inc.)

WEDNESDAY, JULY 11

Republicans Offer County Reforms for Entire State

Ready to Go 'Whole Way' with Lehman Plan for Application in the State of Government

The Governor's 'Surprise' Session Opens

Amendments in One Bill Exempted from Job Cut

By a message to the Legislature, Governor Lehman today announced that he had signed a bill which would exempt from the proposed job cuts certain members of the State Police and the State Guard.

The bill, which was introduced by Senator Charles McNulty, of New York, and passed by the Senate last night, provides that the members of the State Police and the State Guard who have been in the service for more than ten years shall be exempt from the proposed job cuts.

Lehman's message to the Legislature today also announced that he had signed a bill which would exempt from the proposed job cuts certain members of the State Police and the State Guard.

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Beam to Kill Army at 200 Miles, Tesla's Claim on 78th Birthday

Death Ray Also Available as Power Agent in Peace Times, Inventor Declares

By Joseph W. Alsop Jr.

Dr. Nikola Tesla, inventor of poly-phase electrical current, pioneer in high frequency transmission, predecessor of Marconi with the wireless, celebrated his seventy-eighth birthday yesterday by announcing his invention of a beam of force somewhat similar to the death ray of scientific romance.

It is capable, he believes, of destroying an army 200 miles away; it can bring down an airplane like a duck on the wing, and it can penetrate all but the most enormous thicknesses of armor plate. Since it must be generated at stationary power plants by machines which involve four electrical devices of the most revolutionary sort, Dr. Tesla considers it almost wholly a defensive weapon. In peace times, he says, the beam will also be used to transmit immense voltages of power over distances limited only by the curvature of the earth.

As a hors d'oeuvre to this July 4th announcement, Dr. Tesla disclosed that he has lately perfected instruments which flatly disprove the present theory of the high physicists that the sun is destined to burn itself out until it is a cold cinder



Herald Tribune photo—Stefan Nikola Tesla

floating in space. Dr. Tesla stated that he is able to show that all the suns in the universe are constantly growing in mass and heat, so that the ultimate fate of each is explosion.

Dr. Tesla refused to describe specifically the instruments in question in both discoveries, or even to disclose the principles upon which they

(Continued on page fifteen)

Bid Too Low, City Refuses To Sell Bonds

Banks 'Ganged' to Get \$72,000,000 Issue at Cheap Price, LaGuardia Says After 4% Offer

May Seek Private Investors' Market

Wall St. Defends Yield Basis and Insists Huge Syndicate Was Justified

The city's widely heralded \$72,000,000 bond and corporation issue failed to come off yesterday as the F. H. LaGuardia and Comptroller Joseph D. McGoldrick and other members of the sinking fund committee had read the five tender bids submitted by a bank syndicate headed by the Chase National Bank and the banking firm of Henry Clay & Co. and the Emigrant Industrial Savings Bank.

All the bids, except that of the savings bank, which was for but 2 percent of the serial bonds, were rejected on the good-faith deposit checks returned to the bankers. And after them went a thundering denunciation by Mayor LaGuardia.

Accused Banks of "Ganging"

The Mayor charged that the bank had "ganged" to put in an artificial tender. He warned them that he would give them one more chance to make an honest, bona fide offer, or they didn't accept that chance. The city would get the money elsewhere.

The bids were opened in the controller's office at noon. It was a momentous occasion, as the city was about to receive bids for the first time in more than 10 years. The Mayor and the Comptroller, stood by, tensely, as the bids were taken from the bankers. The Comptroller, McGoldrick, read the bids, and the Mayor, LaGuardia, before he was approached by the

U.S. Revenue Up Billion Over '33, Report Shows

Processing Taxes, Levied for First Time, Account for 371 Millions of Gain

WASHINGTON, July 10.—Internal revenue collections increased in the fiscal year 1934 over 1933 by more than \$1,000,000,000. Detailed tabulations made public today by Guy T. Helvering, Commissioner of Internal Revenue, showed that agricultural processing taxes, which were imposed

Destroyers Greet President, Then Olaya Rides Through Crowded Streets With Him

CARTAGENA, Colombia, July 10.—In a gesture of good will President Roosevelt stopped on foreign soil here today and extended greetings from the people of the United States to their neighbors in Latin America. Against a background of widely cheering multitudes of natives, the

in Beeson, member of a Pennsylvania family and a rich Beeson, steel magnate. The story she had given him, relating how she had swindled of \$177,000 her acquaintances who had used the old pocketbook trick to

One of the swindlers, a woman, is now serving a four-year term in the penitentiary.

E. Callahan, who, with the late John H. Callahan, proprietor of a Rochester stand and testified that he and her husband were in California. They were out of \$141,000—all but their life savings—by the same method used by Davis and Beeson. He identified Noble John Callahan as the man who had killed her. Both Moore and Callahan were convicted of the same crime. Callahan, although the one on trial, he is excitedly as a government

and McKay, the two principals, are accused as back-siders in the Reno. The alleged the firm, the Riverside was used for the transaction of liquidation of securities for betting on horse racing the stock market.

Missdorf, retired Chicago gambler, finished his testimony loudly and introduced a woman in the game. He said that he was sending him out of the hands of the swindlers who had him to put up \$150,000, a large wager on a horse race, which he eventually lost, "up to him" by drawing a check for the amount on the Chase Bank. The check later was cashed, however.

He told stories of being beaten by the bunco gang were there, a section foreman, who lost \$10,000 his money, and Richard Hermal, of Chicago, where he is foreman of a factory. Mr. Hermal said that he was tangled with the bunco machine in April, 1928. He met two operators in the game. After the bunco game was played and Mr. Hermal was out of \$27,000, he was sent over to the last moment. He was with the money. Seated at the resort, discussing the game, some one offered him a bet. The next thing he knew, Mr. Hermal was off to a train. His money was gone and he could give no explanation.

He will continue at 10 a. m.

Senior Stamp Design Announced by Farley

Will Be Placed on Sale

And one of its features is that the patrons don't have to pay anything for drinking water. A veterinarian paid for its construction

Beam to Kill Army at 200 Miles, Tesla's Claim on 78th Birthday

(Continued from page one)

are built. He said that at some date soon he expected to make the full details public in scientific journals or before scientific bodies. Since he considers the beam of force a defensive weapon, he hopes to be able to present it in full for the first time at the disarmament conference at Geneva. He also said that minor parts of each of the discoveries are still in the theoretical, or blueprint stage, but he pointed out that his method of work has almost always been purely mental.

Inventor Reviews Past

The aging inventor, a tall, thin, almost spiritual figure in the sort of brown cutaway suit that older men wore before the World War, received interviewers in one of the public rooms in the Hotel New Yorker, where he lives. Before he would speak of his present work he reviewed his past achievements, which entitle him, more than Edison, Steinmetz or any other, to be called the father of the power age. He has 30 patents to his credit, and not a few of them are for epoch-making discoveries, but over and over again he has been ridiculed as a lunatic. He recalled this and his work together as if to prepare the way for his announcements.

He came to the idea of a beam of force, he said, because of his belief that no weapon has ever been found that is not as successful offensively as defensively. "The perfect weapon of defense, he felt, would be a frontier wall, impenetrable and extending up to the limits of the atmosphere of the earth.

Creates Rays in Free Air

Such a wall, he believes, is provided by his beam of force. It is produced by a combination of four electrical methods or apparatuses. First and most important is a mechanism for producing rays and other energy manifestations in free air. Hitherto vacuum tubes have always been necessary. Second is an apparatus for producing unheard-of quantities of electrical current and for controlling it when produced. The current is necessary as power for the first mechanism. Without this, no rays of sufficient strength could be produced. The third is a method of intensifying and amplifying the second process, and the fourth is a method of producing "tremendous electrical repellent force."

"These four inventions in combination enable man to loose in free air forces beyond conception," Dr. Tesla remarked mildly. "By scientific application we can project destructive energy in thread-like beams as far as a telescope can discern an object. The range of the beams is only limited by the curvature of the earth. Should you launch an attack in an area cov-

ered positive accuracy. Like many other things I have done they require no previous experiment once they are properly conceived. There are a few details to be finished—my calculations might be perhaps 10 per cent off at present—and then the whole thing will be presented to the world. It has always been my practice to give the world a sort of preview of what I am doing so that a reception is prepared."

Power Supply Unlimited

"I should also say, and this is perhaps as important as anything else about it, that in this apparatus all limitations as to electric force and the quantity of electricity transmitted have been removed."

It was evident that Dr. Tesla's work on the force beam as a peace-time means of power transmission was far less advanced than his work on it as a defensive weapon. He did not describe the nature of the receiver which will transform the force beam into useful power, though he declared that he had designed one, nor was he able to show just how the dangers of having such death-dealing but invisible beams, traveling through the air could be surmounted.

Dr. Tesla was far less definite in his description of the experiments which led to his revolutionary prediction of the future of the sun and its system than he was when talking of the force beam. He had, he said, detected "certain motions in the medium that fills space, and measured the effects of these motions." The results of the experiments had led him "inescapably" to the conclusion that such bodies as the sun are taking on mass much more rapidly than they are dissipating it by the dissipation of energy in heat and light.

"Heat to Kill All Peoples"

He pointed out that his theory means a future for the earth as different from the general belief as the future of the sun. It is generally held that life on the earth will cease when the sun grows so cold that the earth temperature drops to a point where life can no longer be supported. Dr. Tesla prophesies that life on the earth will cease because the planet will grow too warm to support life, and he believes that life will then begin on outer planets now too cold. He said that his discovery not only allowed him to predict a very different future for the heavenly bodies from that now generally expected for them, but also to calculate in a new way their age.

Nor were these two discoveries, of a force beam and a new future for the universe, the only new things Dr. Tesla had to offer. The completely new and unlimited source of energy which he stated he was at work on is, he said, still under examination by him. Since he first spoke of it great strides have been made, and the complete announcement of it is to be expected in a comparatively short time.

Finally there was the electric bath.

polio, has, it is believed, the most important discovery in aid of science's peruer against the disease. While hastened to stress that the regarding inherited susceptibility no way resembles a "cure," he believes that this new fact concerning disease will permit a promise of attack.

"It may indicate," said Dr. Aycock, "that some organs are unable to do the work necessary to combat polio myelitis virus and it may be that if it can be identified it can be remedied. Or, 'he' 'It may enable us to select the most likely small proportion of children from the many and protect them by extraordinary precautions for general application."

20 Per Cent Had Family History

An intensive study, Dr. Aycock planned, resulted in the following: Working at the Boston Children's Commission, it was found that 20 per cent of those treated had a family history of the disease. In isolated communities in Vermont, Waitsfield, Barton and Grand Isle, still stronger evidence was found that susceptibility is hereditary. In fact, the percentage of the patients treated with a family history.

Studying children that had the disease, then waiting while they grew up and had children of their own, Dr. Aycock was able to trace the disease through generations, an essential in the hereditary theory. Whole families also were studied. In one family paralysis was found in as many as four generations of a single family. In another nineteen cases were covered in a single family period of forty years.

During the tests particular taken to eliminate the possibility of the disease had been transmitted by infection or contagion. "On the whole, it is a clean record," says Dr. Aycock, "that the further fact, one of a number of children was stricken with the disease, which one child was stricken in Scotland and one of the children was a victim after it had moved to Massachusetts."

"Another chart," he said, "shows a record of a case in Massachusetts where another member of the family who had never seen the first child lived in Italy also contracted the disease." That the disease should be transmitted by inheritance, same susceptibility is explained by Dr. Aycock in that not every child is susceptible tested by the virus.

May Aid Use of Serum

The nature of the fight in this discovery, has not been defined as yet, but the theory offers additional possibilities for the use of serum. The value in the fight has thus far been definitely proved, but is Dr. Aycock's belief that future work on this will be greatly aided by the discovery.

Dr. Aycock summarizes the advance in research as follows:

- "1. It tells us a piece of the puzzle."
- "2. It may enable us to select the most likely small proportion of children from the many and protect them by extraordinary precautions too drastic for general application."
- "To close schools is useless in any event unless gathered children outside of school are

Don't forget **LONG**
REMEMBER
The Novel of Gettysburg
By **MACKINLAY KANTOR**
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Tesla's Wireless Power Dream Nears Reality

Police City, Okla., April 1 (AP).—Forecasters of commerce and industry are predicting that the wireless transmission of electric power without wires will be a reality within a few years.

Plans for a wireless power system were being made ready for a test run of a motor car over a stretch of a railway track to Farley, N. M., with power supplied by radio.

Success would open an ultra-modern system of transportation. The run is expected to be made as soon as the most efficient mechanical method is determined for transferring energy from the radio.

Nikola Tesla, the Serbian-American electrical genius, produced incandescent effects in lamps without other elements in 1903 and performed other weird feats without wires. Now, almost 77, he still is experimenting in New York and has designed a plant for wireless transmission of hydro-electric power, which he proposed should be erected at Niagara Falls.

Details of how the radio-powered motor car equipment works are being worked out.

closely guarded secrets, but were understood to involve use of high frequency current and short wave radio with receiving elements similar to those in television sets.

Predicts New Home Machinery Use of high frequency currents was the basis of Tesla's phenomenal early experiments which led him to predict that some day homes would be lighted and electric machinery run without wires connecting them to power plants.

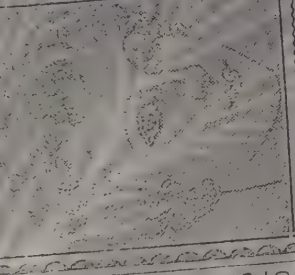
An odd-looking set of electrical and gasoline motored apparatus, including a high-powered radio transmitter with big coils and short antenna, has been set up here to wait current to the specially-motored car for the run of 30 to 40 miles.

CHEAP CHAMPAGNE

day when the Hotel Roosevelt sold them for 50 cents at the bar. The announced aim was to push American champagne.

Champagne cocktails reached a new low last-yeap price yesterday.

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- ALBANY
GRAND CENTRAL
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403-3rd floor
MEDAL 820 5th Ave.
47 W. 34th St. cor. Calypso
Opposite Hotel New York
Room 130, 6th floor
WILSON 7-5353

...to ... Roosevelt, who ... will meet with Maxim ... Soviet Communism ...

MORALS OF OLD

... new book about sex, ... you may have ... a book written cap ... women who are not ... facts, and who want to ... truth about sex and sexual

... new book, by Dr. William ... discusses in the plainest lan ... pertaining to the sex life, ... and out of it. Is it wise ... only as it concerns sex? ... think of love as being possible ... marriage? These vital questions ... are discussed openly and ... in this great book. It gives you an ... view of the whole question of ... as seen by a famous Sexologist whose ... works are praised the world over.

This Partial Table of Contents gives you a faint idea of the value and the completeness of Dr. Wm. J. Robinson's wonderful new book, entitled:

SEX, LOVE and MORALITY

Principles of General and Social Morality
Premarital Relations
Extramarital Relations
What is Prostitution?
Why Love Complicates Sex
Premarital Relations
The Domestic Triangle
Sexual and Sexual Interference
Wrong View of Sanctions and Duties of Love
Sexual Favors
The Double Standard
Unnatural Methods of Love
Definition of Prostitution
Prostitution's Moral Level
Prostitution's Mental Level
Ethics of Prostitution

Does Prostitution Supply a Genuine Need?
Will Prostitution Ever Disappear Entirely?
What to Do With the Prostitute
Three Kinds of Prostitutes
Homosexuality, Transvestitism, and Sadism
Rape
Forced
Masturbation
Abstinence
Prevention of Birth Control
Divorce
Alimony
Breath of Promise
Illegitimacy
Miscellaneous
Sex—What to Do About It

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wards which ... the direction of the opposite ... condition exists ... in such a ... might ... learning ... danger, but ... the ... might he should ... for shelter at once.

It will now ... to show how a large and ... body, such as a loaded railroad ... and transported to considerable ... America ... motives, which ... the ... in the world may have a length of 66 and a width of 11 1/2 feet, presenting thus 760 square feet of ... projection. At the moment the ... strikes the vehicle, the wheels, connections and other ... under the main body arrest the motion of the ... causing a ... pressure of 135 pounds per square foot in excess of that of the atmosphere. But as determined above, owing to the vacuum, a pressure difference of four inches of mercury (that is, two pounds per square inch or 288 pounds per square foot) is maintained, making the whole difference of pressure between the spaces under and above the locomotive 255-135=120 pounds per square foot. The total upward push exerted on the exposed area of 760 square feet is thus 324,760 pounds, which is much more than the weight of such a locomotive (estimated at 200,000 pounds when fully equipped for service).

Ordinarily, the weight should be much smaller; and one can readily see that the vehicle may be instantly raised in a spiral, accelerated and hurled away tangentially to great distance. The average person may be surprised that an insignificant vacuum is sufficient for so stupendous a display of force; but the figures afford an unmistakable proof. I may add that I have assumed minimum values which will be, in all probability, greatly exceeded.

The constant fear of danger from tornadoes and the great losses of life and property which they cause in certain parts make it very desirable to find some means of effectively combating, if not preventing them. Whenever man attempts to interfere with the order of things determined by immutable laws, he finds that his efforts are utterly insignificant when compared with the vast movements of energy in Nature.

One of the greatest possible achievements of the human race would be the control of the precipitation of rain. The sun raises the waters of the ocean and winds carry them to distant regions, where they remain in a state of delicate suspension until a relatively feeble impulse causes them to fall to earth. The terrestrial mechanism operates much like an apparatus releasing great energy through a trigger or priming cap.

If man could perform this relatively trifling work, he could direct the life-giving stream of water wherever he pleased, create lakes and rivers and transform the arid regions of the globe. Many means have been proposed to this end, but only one is operative. It is lightning, but of a certain kind.

More than 35 years ago, I undertook the production of these phenomena and, in 1898, I actually succeeded, using a generator of 2000 horsepower, in obtaining discharges of 13,000,000 volts carrying currents of 1,200 amperes, which were of such power as to be audible at a distance of 13 miles. I also learned how to produce just such lightnings as occur in Nature, and mastered all the technical difficulties in this connection. But I found that even the small

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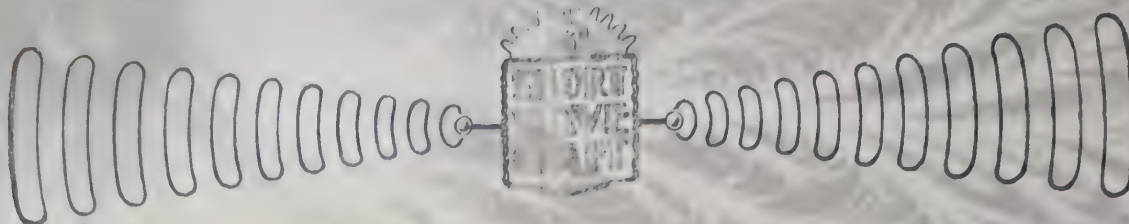


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and comparatively negligible briber work called for the employment of thousands of horse-power and this is the great obstacle now in the way of this supreme accomplishment. It is such difficulty would be encountered in our attempt to control tomorrow because, as before stated, these

HUGO GERNSBACK, EDITOR

W. WINFIELD SECOR, MANAGING EDITOR



Unknown Short Waves

An Editorial By HUGO GERNSBACK

WE ARE apt to talk quite glibly about short wave — day in and day out. We use the instrumentality of short waves to receive music and talk from the Antipodes, and we use them for dozens of our other requirements, day in and day out; but, when it comes to the waves themselves, practically nothing is known about them! They are still a book sealed tight with seven seals.

So far, most of our experimental and research work has been concerned with the generation and the effect of short waves; but what happens to these waves between the transmitting antenna and your receiving set is still a deep mystery.

While we know in a general way that waves are reflected by the so-called Kennelly-Heaviside and Appleton layers, which gives rise to "skip effects," very little is known on the side of this fact. We do know that the upper rarefied atmospheric strata reflect the radio waves, somewhat as a curved mirror would reflect light; still, this statement does not always hold true either, and other things are happening, most of which we do not understand as yet.

For instance, only recently, Signor Marconi on his yacht "Electra" did some constructive experimental work upon a 3/5-meter band. Normally, the effect of such a wave should not go beyond the horizon; because at these ultra-short wavelengths, as scientists think, the waves assume the physical characteristics of light, and therefore cannot go beyond the horizon, any more than a searchlight can go around the curve of the earth.

It is true that, as Marconi pointed out, light waves suffer a certain amount of refraction; so that you actually can see them a little below the horizon, but not much. This, however, does not explain how Marconi could send and receive short waves over a distance of 160 miles, when a light beam would not go more than fifty miles at the most.

We are, therefore, face to face with a new mystery of short waves; since they do not seem to behave "according to Hoyle." Something else happens here that we do not understand. The chances are that at this point our good friend Dr. Nikola Tesla steps into the breach. For many years, this illustrious savant, the most distinguished living inventor of today, has claimed that all radio transmission, whether on long or short waves, is not done by free waves in space at all, but that it is done by currents transmitted through the earth! Asked by me some years ago, how he explains transmission from an airplane to the ground,

Tesla stated that this is nothing but a condenser or capacity effect, wherein the ground was one plate and the plane another. This is not at all illogical, when it is considered that submarines can send and receive radio messages while totally submerged; always providing that their aerials are highly insulated and are not short-circuited by the salt water. The same is the case in exploration of the deepest caves that have, as yet, been reached by man. There is no trouble in signalling to these caves, and transmission and reception is always remarkably easy.

When Marconi, therefore, now transmits ultra short waves beyond the horizon, you may be sure that the ground effect, or the so-called ground-wave, has a lot to do with it; and future experimental and scientific research into this field will no doubt affirm or reject the theory.

There is still a tremendous amount of experimental work to be done in the exploration of radio waves. It has always been a source of wonder to me why short-wave experimenters have not tried their hand at "underground reception." This means of reception was first tried out on a large scale by the late Dr. James Harris Rogers of Hyattsville, Md. All during the war, by means of buried insulated cables, which rested in trenches anywhere from 3 to 6 feet below the surface of the earth, Dr. Rogers was able to receive regularly European stations, with an almost total absence of static. He could even receive such stations when a thunderstorm was raging overhead!

For those experimenters who reside in the country, I would suggest that they try their hand at underground reception for short waves. The trick is rather simple; all that is necessary is to bury a rubber-covered wire in the ground, after digging a trench some 20 to 50 feet in length, and then cover the cable. This then is your new aerial. It should even be possible, today, to use a transposition aerial with two feeder lines running in each direction, and bring the twisted cable into the set. This would do two things: it would no doubt improve reception, and it would certainly do away with a lot of natural static as well as "man-made" static.

Here is an extremely interesting field for the experimenter who wishes to accomplish something worthwhile and who wishes to leave the beaten track. The editors would be pleased to hear from those who have made experiments in short-wave underground reception, and the results will, of course, be published for the benefit of all.

SHORT WAVE CRAFT IS PUBLISHED ON THE 5th OF EVERY MONTH

This is the November, 1933, Issue—Vol. IV, No. 7. The next Issue Comes out November 5th

Editorial and Advertising Offices—96-98 Park Place, New York City

Before TO President Roosevelt, who soon will meet with Maxim Litvinoff, Soviet Commissar for Foreign Affairs.

TESLA CLAIMS MACHINE TO TAP COSMIC ENERGY

Continued from First Page.

years of laboratory search and scientific experimentation have been disposed of.

"I shall not announce the scientific principles of the discovery and describe the mechanical means I have devised for carrying it out, for the present. It is sufficient at this time to say that I have performed experiments and obtained results from which I am able to calculate what the mechanism may be expected to perform. Much, of course, remains to be accomplished, but it is work not necessarily of a creative kind; it can be done by many, and, hence development to the point of actual operation may be enormously speeded up.

"WILL FLOW AT NIGHT."

"Night will not interrupt the flow of the new power supply. The disappearance of the sun below the horizon will not shut it off.

"The central-plant engine which will mechanize the cosmic energy and shoot it electrically to the other side of the world or the other side of the street will operate on an entirely new principle, and will develop hundreds of thousands of horsepower.

"Any number of such central plants can be built, so there is no limit to the volume of power which it will be possible to develop for the turning of machinery—for the running of trains and automobiles, the driving of ships, the operating of factories, the myriad different motor tasks now performed by engines and machines which derive their power from the regular fuels of industry.

CITES "ABSURD REPORT."

"My statement of this discovery and invention, the result of nearly a third of a century of scientific toil, should serve to quiet the absurd report which has got about that I have perfected a portable engine which by extracting atomic energy will drive the largest steamship across the ocean. I have smashed probably trillions of atoms, and have definitely determined that they contain no available energy. The theory that they do is a futile dream. But the new cosmic power, the harnessing of the energy of the universe to the machinery of men, that is not a dream."

Type of persons placing Situation in. If you are in need of an able office help refer to these columns.

THE AMERICAN

NOV. 1, 1933

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Device to Harness Cosmic Energy Claimed by Tesla

Predicts New Power Will Soon Displace All Present Fuels; Could Be Wirelessly.

Nikola Tesla, the celebrated physicist, recognized in the scientific world as the foremost living inventor,

announces that "at a date not distant" a new source of power will be available everywhere, displacing coal, oil, gas, and the other established fuels of industry. The inventor authorizes the statement that the mechanism which is designed to revolutionize industry will be, when he presents it as his crowning achievement in the field of applied science, the result of thirty years of search and experimentation into and with the mysterious force which for want of a more precise terminology is called cosmic energy.

NIKOLA TESLA
Says New Power in Universal Use.

"This new power for the driving of the world's machinery will be derived from the energy which operates the universe, the cosmic energy, whose central source for the earth is the sun, and which is everywhere present in unlimited quantities.

"PRESENT EVERYWHERE."

Dr. Tesla said: "This new power for the driving of the world's machinery will be derived from the energy which operates the universe, the cosmic energy, whose central source for the earth is the sun, and which is everywhere present in unlimited quantities.

"From the actual mechanical apparatus which I have developed for utilizing this energy, the power to drive engines and machines can be transmitted, either by wire or by my wireless system, as preferred, from central plants which may be located wherever desired, to any point on the globe, whether on land or sea.

"When the new power becomes commercially available, there will be no further necessity for depending on coal, oil, gas, or any other of the common fuels.

"NEED NOT BE DISTANT."

"Because no man can foretell with assurance how swiftly or how tardily a revolutionizing scientific discovery and its mechanical complement will be commercially introduced, it is impossible for me to say how soon the new universal power will be in use. The time, however, need not be distant. The scientific uncertainties and mechanical difficulties with which I have dealt through thirty

Continued on Page 5, Column 1.

Board Approves Contract for Dam

OLYMPIC, Wash., Oct. 31 (AP). — Columbia Basin Commis-

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Tremendous NEW POWER soon to be unleashed

By Carol Bird

Nikola Tesla, Starting His 78th Year, Works on Revolutionary Power Project and Also Is Completing Process for Photographing Thought

THE NOBLE theory that a man's mind and accomplishments are not diminished with age, as the world's leading scientists enter his 78th birthday, is being proved by the fact that Nikola Tesla, inventor of the alternating current system, the induction motor, and the radio, is still working on his revolutionary power project and also is completing the process for photographing thought.

Mr. Tesla, 77, has been with the project for many years, and his work is being carried on by his assistants, who are always working on his projects. He is now working on the project of photographing thought, which is a process of recording the thoughts of a person by means of a special apparatus.

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"Such a source of power obtainable everywhere will solve many problems with which the human race is confronted. My alternating system has been the means of harnessing 30,000,000 horsepower of waterpower, and there are projects now going on all over the world which will eventually double that amount. But, unfortunately, there is not enough waterpower to satisfy present needs, and everywhere inventors and engineers are endeavoring to unlock some additional store of energy."

Will the smashing of the atom lead to this new power energy? Let Mr. Tesla answer. "The public is naturally led to expect a great revolution through the harnessing of atomic power, but that is an illusion. Atomic energy is not available for work. I operated many years ago apparatus of a capacity of 2000 horsepower and tension of 18,000,000 volts with which trillions of atoms were melted in a fraction of a second. I generated all sorts of heat and electricity, but found no trace of any energy which should have been liberated through the shattering of atomic 'nuclei,' according to theory. For the first time, I have learned my fellow scientist that there is nothing to be expected in this field except some 'practical efforts due to changes in the atomic structure which may have more or less value.'"

By adding that the new form of energy which he has been investigating many years would be available at any place in the world in unlimited quantities, and that the machinery for harnessing it would last more than 500 years, Mr. Tesla would say little more on the subject. Just when the power will become available for practical purposes he could not predict with any degree of precision. In a few years, perhaps, he ventured to say.

Mr. Tesla then talked of several other projects on which he has been working by way of relief from too much concentration on the main piece of work. He described one of his other interests, one highly dramatic, which stirs the imagination and which, doubtless, will sound too revolutionary to most people. But it must not be forgotten, as Mr. Tesla points out, that the ideas of television and radio and airplane were scoffed at in their infancy.

"I expect to photograph thoughts," announced Mr. Tesla calmly, in the same tone of voice that a person occu-

pled with some trivial things in the scheme of life might announce that it was going to rain. "In 1923, while continuing Mr. Tesla's work, I became convinced that a definite image formed in thought must, by reflex action, produce a corresponding image on the retina, which might possibly be read by suitable apparatus. This brought me to my system of television, which I announced at that time. "My idea was to employ an artificial retina receiving the image of the object seen, an 'optic nerve' and another such retina at the place of reproduction. These two retinas were to be constructed somewhat after the fashion of a checker-board, with many separate little sections, and the so-called optic nerve was nothing more than a part of the earth.

"An invention of mine enables me to transmit simultaneously, and without any interference whatsoever, hundreds of thousands of distinct impulses through the ground just as though I had so many separate wires. I did not contemplate using any moving part—no scanning apparatus or a cathode ray, which is a sort of moving device, the use of which I suggested in one of my lectures of that period.

"Now if it be true that a thought reflects an image on the retina, it is a mere question of illuminating the same properly and taking photographs, and then using the ordinary methods which are available to project the image on a screen. "If this can be done successfully, then the objects manifested by a person would be clearly reflected on the screen as they are formed, and in this way every thought of the individual could be read. Our minds would then, indeed, be like open books."

BESIDES his discoveries concerning the harnessing of the new energy, television and thought photography, Mr. Tesla is working to produce a type of radio transmitter which will insure the strictest privacy in wireless communication regardless of the number of subscribers, and he is developing some important discoveries in molecular physics which will revolutionize the science of metallurgy and greatly improve metals.

After a discussion of his new scientific findings, Mr. Tesla turned to the subject of his personal source of energy and what he considers the real values of life. "One of the most fundamental and

also one of the saddest facts in human life is well brought out in a French proverb which, freely translated, means 'If Youth had the knowledge and Age the power of doing,' said Mr. Tesla. "Our condition of body and mind in old age is merely a certificate of how we have spent our youth. The secret of my own strength and vitality today is that in my youth I led what you might call a virtuous life. "I have never dissipated. When I was a young man I understood well the significance of that old French proverb, although I doubt that I had even heard it then. But I seemed to have a clear understanding while still young that I must control my passions and appetites if I wanted to make some of my dreams come true. "So with his in view, quite early in life I set about disciplining myself, planning a program of living for

Nikola Tesla, dean of American inventors, with numerous triumphs in electrical engineering behind him, as he looked on his 77th birthday, which he recently celebrated

what I considered the sane and worthwhile life. "Since I love my work above all things, it is only natural that I should wish to continue it until I die. I want no vacation—no success from my labors. If people would select a life work compatible with their temperaments, the sum total of happiness would be immeasurably increased in the world. "Many are saddened and depressed by the brevity of life. 'What is the use of attempting to accomplish anything?' they say. 'Life is so short. We may never live to see the completion of the task.' Well, people could prolong their lives considerably if they would but make the effort. Human beings do so many things that pave the way to an early grave. "First of all, we eat too much, but this we have all heard said often before. And we eat the wrong kinds of

foods and drink too many kinds of liquids. Most of the harm of overeating and underexercising comes from about twice conditions in the body and make it impossible for the system to throw off the accumulated poisons. "My regime for the food is and my sleep well for one thing, I drink plenty of milk and water. "Why overeating the bodies that were not? I eat but one meal a day, and I avoid all acid-producing foods. Almost everybody eats too much meat and beans and other foods containing uric acid and other poisons. I partake liberally of fresh vegetables, fresh fruit and cereals, and I eat only a very small amount of meat. But this is a very strong acid reaction, as it is a great deal of sulphuric acid. As for the worst enemy in the fight of life, I eat potatoes, and I should be eaten at least once a day. They contain valuable mineral salts and are a natural thing. "I believe in plenty of exercise. I walk eight or ten miles every day, and never take a cab or other conveyance when I have the time to use my power. I also exercise in my bath daily for I take a bath of great importance. I take a warm bath followed by a prolonged cold shower. "Sleep? I scarcely ever sleep. I come of a long-lived family, but it is noted for its poor sleepers. I expect to match the records of my ancestors and live to be at least 100. "MY SLEEPLESSNESS does not worry me. Sometimes I close for an hour or so. Occasionally, however, once in a few months, I may sleep for four or five hours. Then I awaken drowsily charged with energy. It's a battery. Nothing can stop me after a night. I feel great strength then. There is no doubt about it, but that sleep is a restorer, a vitalizer, that it increases energy. But on the other hand, I do not think it is essential to one's well-being, particularly if one is habitually a poor sleeper. "Today, at 77 as a result of well-regulated life, sleeplessness notwithstanding, I have an excellent state of health. I never felt better in my life. I am energetic, strong, in full possession of all my mental faculties. In my prime I did not possess the energy I have today. And what is more, in solving my problems I use but a small part of the energy I possess. I have learned how to conserve it. Because of my experience and knowledge gained through the years, my tasks are much lighter. Contrary to general belief, work comes easier for other people if they are in good health, because they have learned through years of practice how to give at a given place in the shortest path."

"I expect to photograph thoughts," said Mr. Tesla. "If this can be done successfully, then the objects manifested by a person would be clearly reflected on the screen as they are formed, and in this way every thought of the individual could be read. Our minds would then, indeed, be like open books."

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**Nikola Tesla, Starting His 78th
Year, Works on
Revolutionary Power Project and
Also Is Completing Process
for Photographing Thought**

Some of his inventions or discoveries will be looked upon as "miraculous" some day. Mr. Tesla has spent the last 25 years, and of his many unbalanced theories have caused him to be called a "madman" and a "fool".

Some people ridiculed Copernicus' theory of the heliocentric system, the universe, and today pronounce it as the greatest cosmic rays. Tesla was the pioneer—and Mr. Tesla's opinions are always correct.

My power generator will be of the best kind—just a big mass of steel, and aluminum, comprising a stationary and rotating part, peculiarly adapted for the purpose. I am planning to develop and transmit it to a distance by means of a system now untried. The direct-current system also will be employed if the various difficulties of inductive transmission lines can be overcome.

The image shows the front cover of a book. The cover is a dark, mottled grey or black color with a visible texture. A vertical strip of lighter, possibly tan or light brown, material runs along the left edge, which appears to be the spine or a hinge. The overall appearance is aged and worn.

by the brevity of life. 'What is the use of attempting to accomplish anything?' they say. 'Life is so short. We may never live to see the completion of the task.' Well, people could prolong their lives considerably if they would but make the effort. Human beings do so many things that pave the way to an early grave.

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Great scientific projects.

Several of these inventions or discoveries will be looked upon as "miracles" by many people, for Mr. Tesla has long been a scientist years ahead of his time, one whose advanced theories have alternately stamped him a "madman" and a wizard.

Just as people ridiculed Copernicus' theory of the planetary system, the unenlightened jeered Tesla's pronouncement, years ago, regarding cosmic rays. The pathfinder and the pioneer—and Mr. Tesla is both—are always condemned by the masses.

NIKOLA TESLA, tall, lean, with the face of an ascetic and deep-set eyes, whose expression denotes concentration on a canvas of work too big for most people's comprehension, partially described a new and inexhaustible source of power he has discovered after years of research, revolutionizing modern physical science. At the same time he touched on his own reservoir of energy which makes such monumental discoveries possible at his advanced age.

How does he tap both these deep wells? What is the secret of fine health, keen mind, unusual vitality and mental force at 77, the time of life when most men are sitting in the sun with shawls over their knees or, alas! lying beneath the sod?

Mr. Tesla is the father of the alternating system of power transmission and radio, the induction motor and Tesla coil.

Asked about his startling new scientific discoveries, one of which concerns the "photographing of thought," which will, he maintains, bring about a tremendous social revolution, he said:

"My first and most important discovery concerns the harnessing of a new source of power, hitherto unavailable, to be developed through fundamentally novel machines of my invention.

"I am not yet prepared to dwell on the details of the project, for they must be checked before my findings can be formally announced. I have worked on the development of the underlying principles for many years. From the practical point of view of the engineer engaged in power development, the first investment will be relatively very great, but once a machine is installed it may be depended on to function indefinitely, and the cost of operation will be next to nothing.

"My power generator will be of the simplest kind—just a big mass of steel, copper and aluminum, comprising a stationary and rotating part, peculiarly assembled. I am planning to develop electricity and transmit it to a distance by my alternating system now universally established. The direct current system could also be employed if the heretofore insuperable difficulties of insulating the transmission lines can be overcome.

"Such a source of power obtainable everywhere will solve many problems with which the human race is confronted. My alternating system has been the means of harnessing 30,000,000 horsepower of waterpower, and there are projects

Revolutionary Power Project and Also Is Completing Process for Photographing Thought

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Beyond adding that the new form of energy which he has been investigating many years would be available at any place in the world in unlimited quantities, and that the machinery for harnessing it would last more than 5,000 years, Mr. Tesla would say little more on the subject. Just when the power will become available for practical purposes he could not predict with any degree of precision. In a few years, perhaps, he ventured to say.

Mr. Tesla then talked of several other projects on which he has been working by way of relief from too much concentration on the main piece of work. He described one of his other interests, one highly dramatic, which stirs the imagination and which, doubtless, will sound too revolutionary to most people. But it must not be forgotten, as Mr. Tesla points out, that the ideas of television and radio and airplane were scoffed at in their infancy.

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Continued Mr. Tesla: "In 1893, while engaged in certain investigations, I became convinced that a definite image formed in thought must, by reflex action, produce a corresponding image on the retina, which might possibly be read by suitable apparatus. This brought me to my system of television, which I announced at that time.

"My idea was to employ an artificial retina receiving the image of the object seen, an 'optic nerve' and another such retina at the place of reproduction. These two retinas were to be constructed somewhat after the fashion of a checker board, with many separate little sections, and the so-called optic nerve was nothing more than a part of the earth."

"An invention of mine enables me to transmit simultaneously, and without any interference whatsoever, hundreds of thousands of distinct impulses through the ground just as though I had so many separate wires. I did not contemplate using any moving part—a scanning apparatus or a cathodic ray, which is a sort of moving device, the use of which I suggested in one of my lectures of that period.

"Now if it be true that a thought reflects an image on the retina, it is a mere question of illuminating the same properly and taking photographs, and then using the ordinary methods which are available to project the image on a screen.

"If this can be done successfully, then the objects imagined by a person would be clearly reflected on the screen as they are formed, and in this way every thought of the individual could be read. Our minds would then, indeed, be like open books."

BESIDES his discoveries concerning the harnessing of the new energy, television and thought photography, Mr. Tesla is working to produce a type of radio transmitter which will insure the strictest privacy in wireless communication regardless of the number of subscribers, and he is developing some important discoveries in molecular physics which will revolutionize the science of metallurgy and greatly improve metals.

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"I have never dissipated. When I was a young man I understood well the significance of that old French proverb, although I doubt that I had even heard it then. But I seemed to have a clear understanding while

still young that I must control my passions and appetites if I wanted to make some of my dreams come true.

"So with this in view, quite early in life I set about disciplining myself, planning out a program of living for what I considered the sane and worthwhile life.

"Since I love my work above all things, it is only natural that I should wish to continue it until I die. I want no vacation—no surcease from my labors. If people would select a life work compatible with their temperaments, the sum total of happiness would be immeasurably increased in the world.

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Nikola Tesla, d
in electrical en

Tesla seems on the verge of something stupendous! — m...

SUNDAY, SEPTEMBER 10, 1933.

Tremendous NEW POWER
soon to be unleashed

"Today, as a result of regulated life, as a result of withstanding life, I am a certificate of health. I am better in my life. I am strong, in full possession of my mental faculties. In my mind I do not possess the energy I possess in my body. And what is more, the problems I use but a few of the energy I possess, I learned how to control because of my experience. The strength gained through this is much lighter. I am a general belief, work for older people if they are healthy because they through years of practice arrive at a given place, rest, bath."

**MANY NEW RO
OPENED ACRO**

Fortunately for the Kansas City and the rest of the Chicago world's tremendous progress in the state highway department in the construction of the four highways has made the tourist many interesting routes. Thousands of tourists from the West and Southwest are crossing Missouri, and the state has crossed the state border. Tourist elites of great interest have been in the path of the Chicago for the East.

Newly paved shorter routes make it easier for tourists to visit natural areas of great interest that were previously inaccessible.

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Journal-Past Pattern

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Nikola Tesla, Starting His 78th Year, Works on Revolutionary Power Project and

By CAROL BIRD.

PROVING his theory that a man's efficiency and accomplishments should increase, and not diminish with mellow age, Nikola Tesla, inventor, physicist and one of the world's leading electrical technicians, envisaged his seventy-eighth year as usually envisaged on three or four great scientific projects.

Several of these inventions or discoveries will be looked upon as "miracles" by many people, for Mr. Tesla is a true scientific

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Several of these inventions or discoveries will be looked upon as "miracles" by many people, for Mr. Tesla has long been a scientist years ahead of his time, one whose advanced theories have alternately stamped him a "madman" and a wizard.

Just as people ridiculed Copernicus' theory of the planetary system, the unenlightened jeered Tesla's pronouncement, years ago, regarding cosmic rays. The pathfinder and the pioneer—and Mr. Tesla is both—are always condemned by the masses.

NIKOLA TESLA, tall, lean, with the face of an ascetic and deep-set eyes, whose expression denotes concentration on a canvas of work too big for most people's comprehension, partially described a new and inexhaustible source of power he has discovered after years of research, revolutionizing modern physical science. At the same time he touched on his own reservoir of energy which makes such monumental discoveries possible at his advanced age.

How does he tap both these deep wells? What is the secret of fine health, keen mind, unusual vitality and mental force at 77, the time of life when most men are sitting in the sun with shawls over their knees or, alas! lying beneath the sod?

Mr. Tesla is the father of the alternating system of power transmission and radio, the induction motor and Tesla coil.

Asked about his startling new scientific discoveries, one of which concerns the "photographing of thought," which will, he maintains, bring about a tremendous social revolution, he said:

"My first and most important discovery concerns the harnessing of a new source of power, hitherto unknown, to be developed through fundamentally novel machines of my invention.

"I am not yet prepared to dwell on the details of the project, for they must be checked before my findings can be formally announced. I have worked on the development of the underlying principles for many years. From the practical point of view of the engineer engaged in power development, the first investment will be relatively very great, but once a machine is installed it may be depended on to function indefinitely, and the cost of operation will be next to nothing.

"My power generator will be of the simplest kind—just a big mass of steel, copper and aluminum, comprising a stationary and rotating part, peculiarly assembled. I am planning to develop electricity and transmit it to a distance by my alternating system now universally established. The direct current system could also be employed if the heretofore insuperable difficulties of insulating the transmission lines can be overcome.

"Such a source of power obtainable everywhere will solve many problems with which the human race is confronted. My alternating system has been the means of harnessing 30,000,000 horsepower of waterpower, and there are projects

now going on all over the world which will eventually double that amount. But, unfortunately, there is not enough waterpower to satisfy present needs, and everywhere inventors and engineers are endeavoring to unlock some additional store of energy."

WILL the smashing of the atom lead to this new power energy? Let Mr. Tesla answer:

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Nikola Tesla, one of American's in electrical engineering during his day, which he

Tesla seems on the verge of something stupendous! —

NEW POWER

is unleashed



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creates energy. But on the other hand, I do not think it is essential to one's well being, particularly if one is habitually a poor sleeper. "Today, at 77, as a result of well regulated life, sleeplessness notwithstanding, I have an excellent certificate of health. I never felt better in my life. I am energetic, strong, in full possession of all my mental faculties. In my prime I did not possess the energy I have today. And what is more, in solving my problems I use but a small part of the energy I possess, for I have learned how to conserve it. Because of my experience and knowledge gained through the years, my tasks are much lighter. Contrary to general belief, work comes easier for older people if they are in good health, because if they have learned through years of practice how to arrive at a given place by the shortest path."

Copyright, 1932.

MANY NEW ROUTES OPENED ACROSS STATE

Fortunately for the people of Kansas City and the Southwest in this Chicago world's fair year, the tremendous progress made by the state highway department of Missouri in the construction of Missouri highways has opened up to the tourist many new and vastly interesting routes across Missouri. Thousands of tourists from the West and Southwest are, this year, crossing Missouri who have never crossed the state before. Many Missouri cities of great historical interests have been placed directly in the path of the people bound for the Chicago world's fair and the East.

Newly paved highways over shorter routes make it easy for the tourist to visit numerous places of great interest that were heretofore inaccessible.

A newly opened paved route, Kansas City to Chicago, makes it possible to drive an automobile the entire distance in one day, as this route from Kansas City through Booneville, Columbia, Mexico and Louisiana has brought Chicago within 500 miles of Kansas City.

People traveling this route can visit the great University of Missouri, travel over the great upland, blue grass prairies of central Missouri; through Audrain county, with the greatest clay mines and fire brick plants in the world; through historical Bowling Green, the home of Champ Clark and the location of the magnificent monument to this great statesman; through the greatest nurseries in the world in Pike county and across three of the great rivers of the Mississippi valley, the Missouri river, the Mississippi river and the Illinois river.

An alternative route from Kansas City would be over U. S. 50 through Sedalia, the Missouri state fair grounds, to Jefferson City.

Another newly opened route across Missouri from the Southwest comes through Springfield and the famous Ozark hills, over the great Bagnell dam and the Lake of the Ozarks, the largest artificial fresh water lake in the world and on through the state capital to join the above route at Kingdom City.

Journal-Post Pattern



TESLA CERTAIN OF HIS NEW POWER

Inventor Says Only Details Remain to Be Checked.

The closing of experiments which reveal the availability of a hitherto untapped reservoir of energy, to be developed through simple machines which will last 500 years, was announced today by Nikola Tesla, inventor and physicist. Mr. Tesla chose his seventy-seventh birthday for his announcement, which was in reality an amplification of an announcement first made on his seventy-fifth.

Even now, however, details remain to be checked before the findings may be published and the source of the power revealed. Mr. Tesla has, however, completed and checked the basic experiments, he says, and feels able to announce as a certainty what he would indicate two years ago as only a probability.

He characterized his discovery as "so basic that it will undo the Einstein theory of relativity." The machines will be simpler than "any machines ever invented for the production of power." He added that the initial costs of the machines would be relatively large, but that they would be, for the practical purposes of short-lived man, everlasting. After installation, the machines will cost almost nothing for operation, he added. "There will be unlimited power almost for the asking."

He said, however, that he expected to be considered crazy. "They called me crazy in 1896 when I announced the discovery of cosmic rays," he said. "Again and again they jeered when I discovered something new and then years later saw that I was right."

Mr. Tesla at one time worked with Thomas A. Edison. He is accepted as one of the world's outstanding electrical technicians, who had contributed much of the research on which the practical application of radio is based.

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Companion: Lo

LOUIS, July 10 (A. P.)—A party of ten men, including Bayles, 31, from Bayles and a party of arrived at a beach on the Mississippi River yesterday. Bayles expressed a desire to go in swimming. He tried to dissuade him from entering the water until the swimming suits.

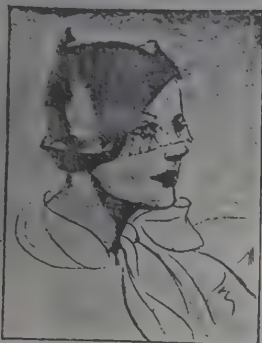
Breaking away from his companions, he leaped into the water and struck out for the shore. As he neared the bank from view in the friends standing on the shore.

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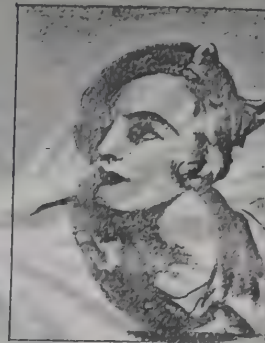


To the Ladies!

By

PRINCESS ALEXANDRA KROPOTKIN

linguist, friend of the famous in Europe, and descendant of the first czar of Russia



(Reading time: 4 minutes 45 seconds.)

OUT on the sidewalk on sunny days, in front of a commercial hotel near the Pennsylvania Station, you can see a gaunt old gentleman walking up and down. He is head and shoulders above the New York crowd. He is a giant.

Dr. Nikola Tesla is a giant in this town and time. During the greater part of this the greatest century in the inventive life of mankind, Dr. Tesla has worked and discovered and thought among the foremost.



Nikola Tesla

He invented the arc light, developed the transmission of electric power without wires. He worked with Edison. His experiments in charging the human body with high-frequency currents (under certain specific conditions) have proved of inestimable value in medical practice.

"Some day," said Dr. Tesla, "we will all be using these so-called 'electrical baths' to cleanse our bodies of dust and dirt."

As I talked with Tesla his thoughts swept back over the centuries to man's first awareness of electricity.

"Moses had an instrument for storing electricity," Tesla told me. "It came from the Egyptians, and it generated electricity from the friction of the wind blowing against curtains of silk."

We talked of Dr. Tesla's childhood; of his Serbian parents; of Smiljan—Place of Flowers—where he was born.

The vividness of his memory amazed me. Dr. Tesla remembers everything he ever has done or seen or heard throughout his long and eventful life. Incidents which occurred when he was two years old are as clear to him as those of yesterday, and he remembers word for word the text of books read in childhood.

Vision, a tremendous capacity for observation, intense interest in all the manifestations of creation—these are Dr. Tesla's, and with them a grave and courtly kindness.

AMONG the new books I like particularly Martha Ostenso's Prologue to Love. The rugged northern country of British Columbia interested me and the strength of the story is unusual, I thought. (Published by Dodd, Mead.)

SOME days ago a determined lady—she is socially prominent and very active in charity work—attempted to prove to me that everyone was much happier in the Middle Ages than most of us are today.

Since I talked with the determined lady I have come upon some rules that were in force at a rich English monastery of medieval times.

"A bath should by no means be refused to a body when compelled thereto by the needs of ill health."

Should a brother wish for one when not advantageous, his desire is not to be gratified."

That was one of the rules. I wonder how the determined lady would like being compelled to forgo the bathing privileges of our kindly civilization? I wonder how she would like to wear the towering hair arrangement of the eighteenth century—and take her hair down only once a month?

Not for me! I prefer to live in 1932.

DO you remember the days when children were encouraged to collect flowers, ferns, and leaves, to press them and save them, and to pin them on sheets of thick paper with a neat description of each specimen written in a corner?

These childhood herbariums were beautiful and instructive. I had, I remember, a fine collection of dried seaweeds. Our trend today is all toward professionalism. Collecting leaves and plants is too often dismissed as leading nowhere.

Yet the road that seems to wander nowhere has a way, at times, of leading to a most unexpected haven. For example:

Fifty women who learned how to preserve and classify plants when they were girls have just been given steady jobs at the New York Botanical Garden.

THE mole has burrowed its way back into favor. Moleskin is the fur of the year for our new "transformation" sets.

Wonderful things, these sets, and I am told that Scotch pelts are the best of the moleskins.

I saw one set consisting of a medium-sized moleskin collar with two fur scarf ends that could be attached to the collar or clipped on to a striped jersey scarf, and a small cape to be used with the collar or without. These combinations served in turn on two suits, two coats, and a cloth dress. I'll bet that set was made of Scotch mole. No other mole could inspire such thrift!

I MET a tall blonde at a recent tea party. I didn't hear her name. I judged her to be about thirty-five. "Mutton," said I to myself, "dressed as lamb."

A pancake hat perched on her curls—the way kids put their hats on sometimes when they are being funny. Her baby-blue dress clung too intimately to her figure, and she wore a large cheap-looking ornament at her throat—of imitation diamonds, I thought.

Half an hour later I learned her name. She was a much advertised beauty, a woman of great wealth. I realized that her diamonds were real but so ostentatious that they looked false.

And her actual age, I knew, was twenty-five, not thirty-five.

With just a little dignity and taste she would have looked a youthful twenty-five. Her foolish pursuit of schoolgirl "kiddishness" added ten years to her appearance.

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The ten inventions selected by him in 1913 were the electric furnace which reduced the price of aluminum from \$12 to 25 cents a pound; the steam turbine, which even then was driving ships at unprecedented speeds and generating energy at unprecedented low costs; the automobile, which was changing the habits of the American people and restoring the highway to its old social and economic importance; moving pictures, the airplane, which realized a dream as old as man; wireless communication, which was intangibly linking ships to their ports and colonies to their mother countries; the cyanide process, which enabled the output of gold; the induction motor of TESLA, which made it possible for alternating current, transmitted over long dis-

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Light on the Cuban Situation

Former President General Mario G. Menocal Stresses Short-Sighted Policy of Present Administration

PEOPLE in this country who chronically complain of the economic situation and sub-normal conditions of business do not seem to realize that, in actual fact, we are much better off than the rest of the world.

Cuba, as a case in point, near enough for Americans to study, is far worse off than we are. Due to a short-sighted and unresourceful government, Cuba has drifted into a serious economic crisis. Cuba had her chance in the latter part of the summer of last year, but lost it on the 13th of August at Pinar del Rio; although in the opinion of experts the soundest elements in the nation favored the return to power of former President General Mario G. Menocal.

General Menocal, during his administration, proved himself to be that admirable combination in a chief executive, —a business man of a high order as well as a political leader gifted with vision and judgment. Qualified observers are firmly of the opinion that he could have saved Cuba the commercial losses which she has sustained during the past few years. The best minds of the country favored him and his policy and still do; but the reigning machine, apparently, is too strong to be broken as yet. Whether Cuba will be able to work herself out of her present difficulties, handicapped as she is, remains to be seen. It appears to persons in a position to speak with authority that she will not be able to do so. At any rate,

her return to comparative prosperity can be expedited only through a change of administration.

The short-sightedness characteristic of the present government manifested itself recently in its advocacy of a grant of a 40-year monopoly on the sale of oil and gasoline in Cuba in exchange for the payment of Cuba's national debt. General Menocal opposes such a scheme on the ground that it is unconstitutional and would be a bad business deal. His intimate knowledge of the resources of his country enables him to estimate the probable value to the government of the oil deposits for the next 40 years at \$300,000,000, whereas the national debt is only \$200,000,000. Thus the Cuban Congress is detected in the act of throwing away the huge sum of \$100,000,000 merely as a political move designed to appeal to the more short-sighted members of the body politic.

"No future government of Cuba would recognize such an agreement," General Menocal declared, "but would, doubtless, annul such a monopoly." The tax on gasoline, General Menocal observed, yields about \$12,000,000 a year. General Menocal said that Oscar Cintas, who is soon to be Cuban Ambassador to the United States, had been in Wall Street for several days trying to negotiate the oil monopoly agreement.

Such mis-steps as this would be avoided under an administration concerned with the true welfare of the nation and not solely with questions of political expediency.

Stimulus and Response

DR. NIKOLA TESLA, who contributed the basic inventions which made possible the commercial development of electricity, has hit upon another discovery which, we feel, will eventually benefit the human race in a manner comparable to the benefits derived from the mysterious fluid which so thoroughly permeates all centers of civilization these days.

This discovery, the details of which were only recently released to the press, is comprised in a simple experiment which shows the mechanical nature of the function of memory. Dr. Tesla, in demonstrating this experiment, arranged a number of tuning-forks at equal distances around a master fork. He then activated the master fork to the point where all the other forks responded to it. He then selected one of the smaller forks at random, and taking it and the master fork into another room, he excited the master fork vigorously and for a long time, while the selected fork responded to it. He then returned with both forks to the first room and, placing the two back in their respective former positions, began gently exciting the master fork until only one fork responded—and that was the one he had chosen at random and treated to prolonged exposure to the vibratory waves of the master fork.

This experiment proves that the function of memory is mechanical and it opens avenues of investigation which seem to us to lead straight to the heart of the question of evolutionary processes in nature. The conditioning of an organism or of insensate atomic structures of any kind to repeated impressions obviously brings about some mys-

"Speak the Language Trippingly on the Tongue"

Try this on your ukulele: A bitter biting bittern bit a better biting bittern, and the bitten bittern bit the bitter bittern back, and the bitter bittern bitten by the better biting bittern is now a bitter biting bittern bitten back.—U. S. S. Breeze Kidder.

Tight-Wads

It's little use! New Jersey elected an "economy Legislature," and then the members voted themselves \$51 de luxe swivel chairs and \$24 card tables.—*Minneapolis Journal*.

terious change in that organism or structure which facilitates its absorption of repeated impressions of the same nature and renders it more susceptible to them. This law has long been recognized by physicists as it is borne out in the evolutionary processes among organic bodies, but the demonstration that it exists in insensate matter not only proves its existence in the former, but offers a readily accessible and demonstrable avenue for experimentation and research.

The human race owes Dr. Tesla a debt from which it will never be absolved, already; but we feel that the simple experiment which he has completed will result in immeasurably increasing that debt, and we hope that his keen intelligence is brought to bear on the continued investigation of the phenomena which it has opened up.

Value of Certain 'Super'

Pioneer Radio Engineer Gives Views on Power

Tesla Says Wireless Waves Are Not Electromagnetic, but Sound in Nature

Holds Space Not Curved

Predicts Power Transmission to Other Planets

By Nikola Tesla

The assumption of the Maxwellian ether was thought necessary to explain the propagation of light by transverse vibrations, which can only occur in a solid. So fascinating was this theory that even at present it has many supporters, despite the manifest impossibility of a medium, perfectly mobile and tenuous to a degree inconceivable, and yet extremely rigid, like steel. As a result some illusory ideas have been formed and various phenomena erroneously interpreted. The so-called Hertz waves are still considered a reality proving that light is electrical in its nature, and also that the ether is capable of transmitting transverse vibration of frequencies however low. This view has become untenable since I showed that the universal medium is a gaseous body in which only longitudinal pulses can be propagated, involving alternating compressions and expansions similar to those produced by sound waves in the air. Thus, a wireless transmitter does not emit Hertz waves which are a myth, but sound waves in the ether, behaving in every respect like those in the air, except that, owing to the great elastic force and extremely small density of the medium, their speed is that of light.

Suggested Short Waves Early

Since waves of this kind are all the more penetrating, the shorter they are, I have urged the experts engaged in the commercial application of the wireless art to employ very short waves, but for a long time my suggestions were not heeded. Eventually, though, this was done, and gradually the wave lengths were reduced to but a few meters. Invariably it was found that these waves, just as those in the air, follow the curvature of the earth and bend around obstacles, a peculiarity exhibited to a much lesser degree by transverse vibrations in a solid. Recently, however, ultrashort waves have been experimented with and the fact that they also have the same property was hailed as a great discovery, offering the stupendous promise to make wireless transmission infinitely simpler and cheaper.

It is of interest to know what wireless experts have expected, knowing that waves a few meters long are transmitted clear to the antipodes. Is there any reason that they would behave radically different when their length is reduced to about half of one meter?

Waves Go Around World

As the general knowledge of this subject seems very limited, I may state that even waves only one or two millimeters long, which I produced thirty-three years ago, provided that they carry sufficient energy, can be transmitted around the globe. This is not so much due to refraction and reflection as to the properties of a gaseous medium and certain peculiar action which I shall explain some time in the future. At present it may be

New Columbia Extension Traces History of

850 Subjects Included in Degree Evening Students May Obtain in Accounting Department

A six-year course in accounting which will enable evening students to gain a bachelor's degree in place of the certificate now issued to the graduates of the four-year course will be inaugurated this fall in the University Extension at Columbia. Professor James C. Egbert, director, announced yesterday.

The change is being made, according to Professor Egbert, to meet with the new requirement of New York State law that after January 1, 1938, "every candidate for examination as a certified public accountant shall present evidence that he has satisfactorily completed the course of study in a college or school of accountancy registered by the department as maintaining a satisfactory standard."

The 1932-'33 program of the Columbia extension which will enter its twenty-second year as a university undertaking, includes 850 courses, among which will be a series of studies in the history of philosophy based on the "public courses" of the universities of France, to be under the supervision of the leading members of the Columbia faculty of philosophy.

During the coming year, students will be enabled to follow their various lines of study at the Seth Low Junior

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so-called three-electrode tubes. This invention has been credited to others, but as a matter of fact, it was brought out by me in 1892, the principle being described and illustrated in my lecture before the Franklin Institute and National Electric Light Association. In my original device I put around the incandescent filament a conducting member, which I called a "sleeve." This device is connected to a wire leading outside of the bulb and serves to modify the stream of particles projected from the filament according to the charge imparted to it. In this manner a new kind of detector, rectifier and amplifier was provided. Many forms of tubes on this principle were constructed by me and various interesting effects obtained by their means shown to visitors in my laboratory from 1893 to 1899, when I undertook the erection of an experimental world-system wireless plant at Colorado Springs.

During the last thirty-two years these tubes have been made veritable marvels of mechanical perfection, but while helpful in many ways, they have drawn the experts away from the simpler and much superior arrangement which I attempted to introduce in 1901. My plans involved the use of a highly effective and efficient transmitter conveying to any receiver at whatever distance, a relatively large amount of energy. The receiver is itself a device of elementary simplicity partaking of the characteristics of the ear, except that it is immensely more sensitive. In such a system resonant amplification is the only one necessary and the selectivity is so great that any desired number of separate channels can be provided without going to wave shorter than a few meters.

For this reason, and because of other shortcomings, I do not attach much importance to the employment of waves which are now being experimented with. Besides, I am contemplating the practical use of another principle, which I have discovered and which is almost unlimited in the number of channels and in the energy three-electrode tubes. This invention

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It might be inferred that I am alluding to the curvature of space supposed to exist according to the teachings of relativity, but nothing could be further from my mind. I hold that space cannot be curved, for the simple reason that it can have no properties. It might as well be said that God has properties. He has not, but only attributes and these are of our own making. Of properties we can only speak when dealing with matter filling the space. To say that in the presence of large bodies space becomes curved, is equivalent to stating that something can act upon nothing. I, for one, refuse to subscribe to such a view.

Need Radio Channels

The chief object of employing very short waves is to provide an increased number of channels required to satisfy the ever-growing demand for wireless appliances. But this is only because the transmitting and receiving apparatus, as generally employed, is ill-conceived and not well adapted for selection. The transmitter generates several systems of waves, all of which, except one, are useless. As a consequence, only an infinitesimal amount of energy goes to the receiver and dependence is placed on extreme amplification, which can be easily effected by the use of the

radio-magnets of mechanical perfection, but while helpful in many ways, they have drawn the experts away from the simpler and much superior arrangement which I attempted to introduce in 1901. My plan involved the use of a highly effective and efficient transmitter conveying to any receiver at whatever distance, a relatively large amount of energy. The receiver is itself a device of elementary simplicity partaking of the characteristics of the ear, except that it is immensely more sensitive. In such a system resonant amplification is the only one necessary and the selectivity is so great that any desired number of separate channels can be provided without going to waves shorter than a few meters.

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Gramophone Records Pictures, Swiss Tells French Academy

PARIS, Sept. 10 (AP).—A Swiss scientist from Geneva, whose name is given as Dussaud, has sent the French Academy of Sciences a paper in which he says he has invented a new system of television.

His system, he said, is based on the principle of registering pictures electrically on gramophone records and reproducing them by means of an ordinary television apparatus.

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AMERICAN—A Paper for People

ELECTRICITY'S VALUE CITED IN WAR ON CANCER

Scientist Declares Million
Volts Can Be Used Without
Discomfort to the Patient

Should cancer be treated with electric currents, with radium, or with the knife?

This question engaged attention of scientists and physicians attending the Eleventh Annual Congress of Physical Therapy at Hotel New Yorker yesterday.

Nicola Tesla, eminent in electrical research and sender of the first wireless message around the world, favors electric current treatments. He said:

"Radium emanations are always hazardous, being difficult to confine to the precise region under treatment."

EXPLAINS APPARATUS.

Tesla went on to explain how an apparatus in his laboratory, producing 80 million electrical oscillations in a second, could be used in cancer treatment.

"With it the body may be charged with a pressure of about one million volts, which may be borne without discomfort, although the same voltage would cause explosion of a piece of metal."

Doctors Harold Swanberg and Arthur E. Perley, differing with Tesla, favored radium in cancer treatment. Dr. Swanberg said:

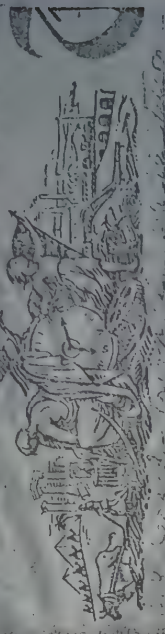
"One nationally known clinic has found that over 60 per cent are cured if the patients present themselves while the disease is in the early stages. Even in the more advanced stages, 12 per cent are cured by radium."

ADVOCATES KNIFE.

Dr. Edward H. Trowbridge, speaking before a special conference on surgery, advocated the knife in cancer treatment, but a new sort of knife, operated by electricity. He said:

"This knife makes it possible to operate in cancer cases before considered hopeless. An electrical current emanating from the tip of the knife does the actual cutting, and in the process it also stops bleeding and seals up nerve-tips."

Other noted physicians who spoke were Dr. Frank H. Krusen, associate dean of Temple University School of Medicine, Philadelphia; Dr. Allen T. Newman, dean of New York University College of Dentistry, and Dr. Charles F. McCarthy, director of physical therapy, New York City Department of Hospitals.



Ultra-Short Radio Waves Bent By Marconi in Test for Vatican

Discovery Permitting Transmission to Overcome Curvature of Earth Is Expected by Experts to Revolutionize Air Communication

The waves would not pass through houses, trees and similar objects. Senator Marconi has been trying for a year to "bend" the waves.

Experts here said that if he had overcome the obstacle of the earth's curvature he could overcome other obstacles, thus greatly extending the possibilities of ultra-short wave communication. This method, they said, eventually would revolutionize radio transmission, for it is infinitely cheaper and simpler than methods in use at present.

The inventor has been pushing his experiments recently to apply them in a first installation for Pope plus XI between the Vatican and the papal summer home at Castel Gandolfo.

May Effect Economies, Experts Say

New York broadcasting engineers expressed great interest yesterday in Senator Marconi's achievement. One said that his developments might make possible great economies in transmission and avoid interference among thousands of stations.

A. B. Chamberlain, chief engineer of the Columbia Broadcasting System, said: "Until now, utilization of the ultra-high-frequency band of radio waves has been a waste of space."

(Continued on page fifteen) C-3

Marconi Bends Ultra-Short Radio Waves

(Continued from page one)

waves has been possible only between though the change will probably be gradual. Use of the ultra-high frequency band, with its consequent short wave length will make possible great two points in a line of vision. If Marconi's discovery has been correctly interpreted in the press reports, an entirely new field of radio and television has been opened up, economies in transmission by thousands of stations without interference.

Charles W. Horn, general engineer of the National Broadcasting Company and a pioneer in the development of international radio communication, who was formerly associated with Marconi, made the following comment: "If the press reports correctly interpret Marconi's achievement, Mr. Marconi has done a wonderful thing, something not believed possible heretofore. It is also probable that he has developed some new principle unknown to other engineers. If this is true, the achievement ranks with the original development of wireless telegraphy."

Tesla Comments on Announcement

Nikola Tesla, famous electrical inventor and a pioneer in radio development, when asked about the feasibility of bending ultra-short electrical waves, said last night at his apartment at the Hotel Governor Clinton:

"That ultra-short waves can pass around obstacles such as presented by the spherical shape of the earth is nothing new. We are telephoning with short waves to the greatest terrestrial distance without difficulty. But this is only due to the fact that the ether of universal medium which transmits the waves is not a solid body as assumed by Maxwell and Hertz, but a gas just like any other, except that it is of inconceivably greater tenacity. This was established by me in experiments I made with powerful high potential vacuum tubes in 1897."

"That the ether is a gas is most fortunate, for if it were a solid body, transmitting transverse oscillations, the signalling by short electrical waves would be very much circumscribed. As I have announced on previous occasions, I have experimented with waves from one to two millimeters

long and I have found them capable of reflecting in a considerable distance from the receiver path. Furthermore, it is well known that short waves are reflected from the upper strata of the air, and this fact has been the basis of an assumption to radio distances."

"Much work in this direction has been done by experts in this country. There is no particular advantage of using ultra-short waves, however, they are less economical to produce and propagate proportionately in a straight line. For this and other reasons their practical use is of limited value."

"I believe, though, that in the near future we will discover chemical methods of producing very short electrical waves in an extremely cheap and simple manner, without any complicated apparatus, which now is necessary. I have done some experimenting in that direction and am hopeful that either through my own efforts or those of others this problem may be solved, in which case a very simple and inexpensive apparatus meeting the practical requirements could be provided for general use."

"I regret very much that wireless experts throughout the world cling to the Herizian theory and continue to build apparatus conformable to that idea instead of designing the transmitter for the transmission of short waves, which would insure incomparably better results."

Declarations of Faith

—By Joseph Auslander—

NIKOLA TESLA, acknowledged dean of American inventors, in a recent interview on his seventy-sixth birthday, reaffirmed his faith in the recuperative vitality of our old universe and proclaimed his enthusiastic belief in the tremendous possibilities of the future with such vigor and such ringing confidence as to shame the cowardly croakings of our modern Cassandras.

Coming on the heels of John D. Rockefeller's robust testament to the world on the occasion of his ninety-third birthday, this exhibition of courage, industry and tenacity on the part of our elders should give us pause. We have endured a devastating plenty of professional pessimism. It is easy enough, Heaven knows, in time of general distress to cultivate a down-at-the-mouth attitude. It is, indeed, far easier than any declaration of faith.

* * *

WHEN Tesla, with a boyish exuberance that mocks his years, informs the world that he has had "a very successful year," it is in the best interest of the world to listen. "I have made two inventions," he continues, "among the most important of my life. When they are announced one will be like the hundred thousand trumpets of the Apocalypse. The other will be less sensational, but it, too, will be important. It will be like the shout with which Joshua's army brought down the walls of Jericho!"

When Rockefeller asserts his unwavering adherence to "the fundamental principles upon which this country was founded—liberty, unselfish devotion to the common good and belief in God"—he is, it would appear, championing an unpopular credo. This talk of "liberty" and "unselfish devotion to the common good" is hardly calculated to sit well on an empty stomach. We can understand that. We can readily appreciate the cynical doubt which might well greet the catchword "liberty" in a land fettered to a vicious amendment. We cannot in all conscience blame that considerable portion of our people which has been betrayed and robbed and crucified by overlords whose "devotion to the common good" would warrant a strenuous use of the whipping post.

* * *

BUT these "fundamental principles" remain fundamental and true nevertheless. If anything, they are more fundamental, more true than they have ever been. That we have traduced these principles is unquestionable. And yet, as principles without which no democratic government can endure, they are not lightly to be dismissed. They were born out of blood and anguish and enormous travail. They will continue to exact a bitter price. But they are worth it.

"Let us," says Rockefeller, "as a nation, looking proudly to our past where it has been noble, and recognizing with humility our mistakes of extravagance, selfishness and indifference, let us, with faith in God, in ourselves and in humanity, go forward, courageously resolved to play our part worthily in building a better world."

* * *

IT is our profound conviction that both Tesla and Rockefeller will contribute mightily toward the building of that better world. It is our prayerful hope that they may live to enjoy the fruits of their building.

•The ROCKET in the

The problem of making war effective has become that of destruction from the greatest distance. The rocket stands out as the most far-reaching potentiality for attack on a distant foe.

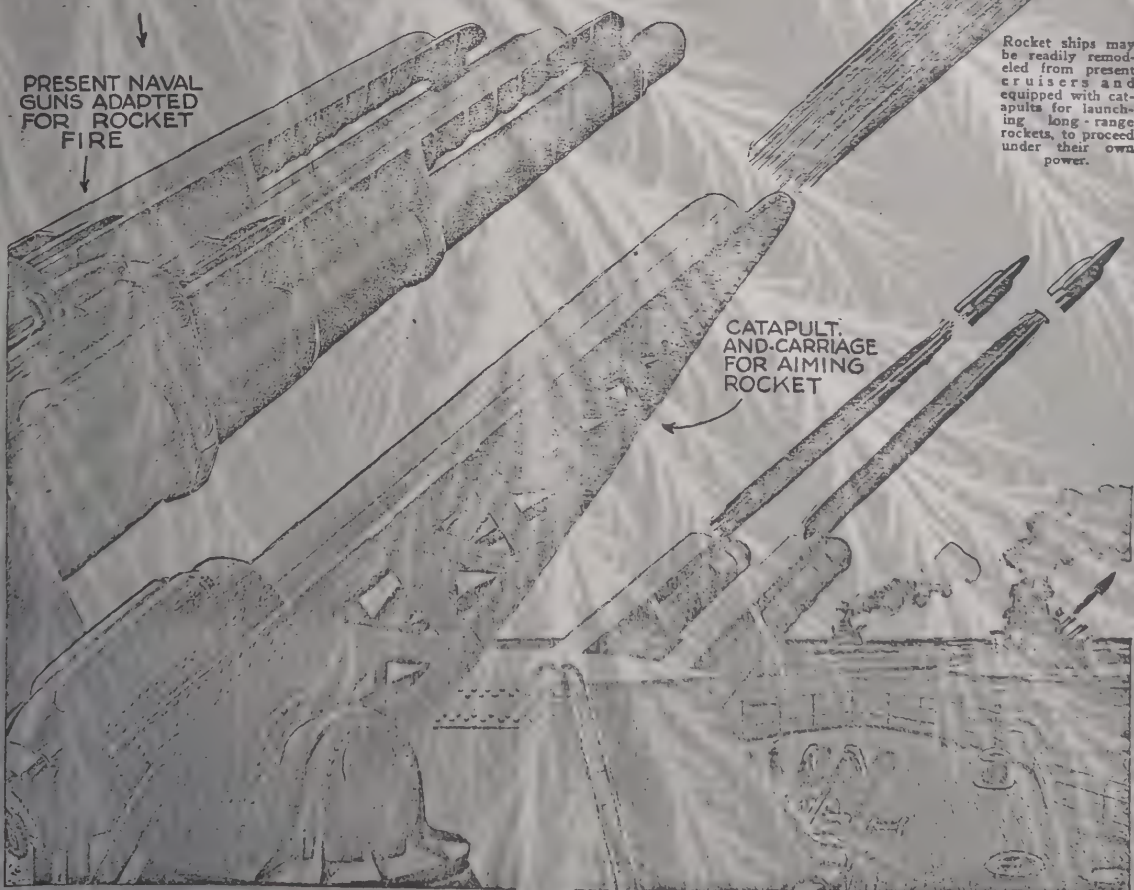
"THE whole nation will find itself on the firing line," said Marshal Foch, looking forward to "the next war." To understand how the rocket will dominate future conflicts, consider the question of destruction by long-range bombardment, one of the expedients of scientific militarists.

Assume that two nations are at war and their armies have been rushed to the frontier. The strategy of the new warfare will call for the prevention of an enemy invasion and, simultaneously, the destruction of the enemy's strategic centers by long-range shells.

Consider what this means. Long-range artillery, which previously has been used principally against opposing armies, at distances of five to twenty-five miles, must now be adapted to shoot shells 200 to 500 miles. It will be necessary, furthermore, to hit the distant targets aimed at; and to hit them often enough to complete the desired destruction. For this novel task, in my opinion, present artillery is entirely unfit and, were the success of future long-range bombardment to rest solely on artillery, one arm of the "destruction from a distance" program would surely fail. But luckily for the militarist, the rocket will supply him with the very instrumentality that he needs.

It is quite possible that, even were long-range guns constructed like mountains of steel, to withstand all the enormous strains of firing, and to give greatly increased velocities to the shells, they would yet fail to achieve the necessary ranges. For the enormous increase in the resistance of the air, at these great velocities, would reduce the speed of the shells so quickly as to minimize the effect of the added propulsive force. The additional energy imparted to a shell, to increase its muzzle velocity, might serve only to heat the casing by friction against the air, and add but little to its actual range.

This fundamental weakness of the present high-power artillery is in contrast with the effectiveness of the rocket-propelled shell as a means of effecting a long-distance bombardment. For the rocket can, first, propel shells to distances impossible with artillery; and, secondly could be shot in such numbers and with such rapidity as to constitute an avalanche of death from which there would be no escape.



Rocket ships may be readily remodeled from present cruisers and equipped with catapults for launching long-range rockets, to proceed under their own power.

March, 1932

EVERYDAY SCIENCE AND MECHANICS

327

next

WAR ?

By DAVID LASSER*

The rocket rises, gaining headway at each instant, under gyroscopic or other control of its flight, until it passes into a practically airless region; and finally descends hundreds of miles away.

The Rocket's Principle

IN simplest terms, the rocket consists of a chamber in which a fuel is burned (See Fig. 1) and the resultant expanding gases are expelled to the outside. The expansion and expulsion of the highly compressed gases causes a reaction or "kick" against the chamber walls that pushes the rocket ahead. This action is similar to the recoil of firearms; the "kick" of the weapon being the reaction to the force of expulsion of the shell.

The rocket carries its own fuel; and its motion continues until the fuel has been exhausted and the momentum lost.

If, to the rocket motor, there is attached a nose filled with high explosive, gas or anything deadly that modern science can create, there is created a self-propelling shell that should make possible the fondest dreams of the militarist.

Such projectiles would be gun and shell in one and, therefore, no heavy ordnance would be necessary to shoot them. It would merely be necessary to give them a start, and they would carry themselves hundreds of miles, to strike with stunning force.

Batteries, shooting rocket shells into the heart of an enemy country, could be built by the thousands, and fired with the rapidity of small calibre artillery.

The rocket, in fact, would travel through the air, in a manner just the opposite of that of an artillery shell. Where the long-range artillery shell leaves the gun at its maximum speed, encountering at once the great resistance of the lower air levels; the rocket would leave the mounting slowly, and acquire speed only as it shot upward into the high rarefied regions of the air, where the resistance is small.

Shooting upward, thirty to fifty miles above the earth in its

passage, the rocket shell would then drop with terrifying speed upon city or munition plant.

War to the Utmost

WHAT would this mean in an actual conflict? Scanning the map of Europe, we see that Paris could easily be shelled from the German border, and Berlin from the Rhine. London would be within range of both French and German shells; and little Switzerland, now a buffer state against the progress of opposing armies, might find itself arched by a rain of Italian and French rocket shells, hurled into enemy territory.

Each nation could devastate the other in a rain of death, from which there could be no relief. All of the creative and destructive facilities of man could be destroyed without a foot being set across an enemy border.

Let us imagine the effect of the rocket upon America, in its supposed isolation. An enemy fleet may start upon the invasion of America equipped with rocket batteries that shoot shells 200 miles or more. This is possible, since no heavy ordnance need be carried to shoot them. The fleet could anchor off our coast and reduce our forts to a mass of ruins. Our sixteen-inch coast-defense guns, with maximum ranges of 30 miles, would be toys, compared to the naval rocket batteries.

Boston, New York, Philadelphia, Baltimore and Washington could be reduced by an enemy fleet resting in safety in the Atlantic; or our Pacific ports might fall without a serious blow being struck.

For emphasis I record an editorial of the *New York Times*, of October 10, 1931, commenting upon the perfection of anti-aircraft guns. "What was to happen in the next war," said the *Times*, "has been described in terms calculated to frighten every nation out of its growth, if the predictions were taken without a thought of the means of protection. In such a vast convulsion the airplane would be the means of destruction. If a defense from the ground could be contrived countries would feel safer."

*President, American Interplanetary Society; author, "The Conquest of Space."



Against an invading fleet armed with long-range rockets, the heaviest of coast defense and naval guns might be as useless as clubs and spears. The extension of battle areas would be as revolutionary as in the days

of the introduction of the modern rifle and the airplane. Assaults would be directed upon known objectives, by map: just as in long-range artillery fire of the past, which is directed upon invisible targets.

Elaborate Ceremonies

Nikola Tesla Tells of New Radio Theories

Does Not Believe in Hertz Waves and Heavyside Layer, Interview Discloses

The model of a "Tesla Coil" which will be featured in the historical exhibit of the radio show reawakens interest in its inventor.

It is not generally appreciated that this curious apparatus, often associated merely with pretty or spectacular demonstrations of high voltage electricity, is really a fundamental part of modern radio. For all the tuning apparatus and circuits in every transmitting and receiving set are simply variations of Tesla coils and Tesla coil circuits.

It was for this invention, and other inventions and principles concerned with tuning, heterodyning, and the generation of continuous waves, which were made at least several years before the very first experiments of Marconi, that many of our most reputable engineers have conceded to Nikola Tesla the title of "Father of Radio."

Mr. Tesla, still actively working, was interviewed last week to get his ideas regarding the prospects of the radio of 1930, and beyond. As a prophet, however, he balked. He had repeated time and again his visions for the future. As far back as 1900, he had contemplated a world-wireless system which included broadcasting, picture transmission, international time service, and in addition television and the distribution of electrical power. Part of this early prophecy has been realized—what remained, still stood as his prediction.

Disputes Hertz Waves

What, then, about power transmission by radio? Laurence M. Cockaday, the technical editor of this radio section, had expressed the opinion several weeks ago that, with present apparatus at least, it was hardly feasible. Mr. Tesla agreed to discuss the point at length. As a result, he made public for the first time one of his most extraordinary conclusions—that Hertz waves do not exist! If his theory is true, there may be found in it more adequate explanations of "dead spots," fading, reflection and a dozen other problems that have always puzzled the profession.

The inventor began by referring to Cockaday's article:

"I have read the article, and I quite agree with the opinion expressed—that wireless power transmission is impractical with present apparatus. The conclusion will be naturally reached by any one who recognizes the nature of the agent by which the impulses are transmitted in present wireless practice. When Dr. Heinrich Hertz undertook

(Continued on page twenty-one)

Nearly 300 Manufacturers to Show Latest Models of Sets and Accessories Monday at 2 P. M.

\$300,000 Broadcast Bill on Networks

Leading Artists to Appear in Costume Before Television and Microphones

By Lloyd Jacquet

TO that ever-increasing group of persons who have discovered radio there is only one Mecca this week. It is the Annual Radio World's Fair, which will unfold during six short days and nights the new 1930 pageant of radio genius and artistry.

It has been going on for six years, this annual parade of the industry's accomplishments for the twelvemonth. Yesterday ideas that were merely visions, imaginations, today realities. And somehow, radio, the super-craftsman, the master showman, has performed and justified the expectancy of thousands of its devotees, who religiously pilgrimage toward the Elysian temple of its god.

Radio has a habit of doing things in a staggering, colossal way. Such is broadcasting, with its nation-wide, even international coverage; such is radio manufacture with its millions of receivers from the factories of the world. And now the "biggest show on earth," the largest industrial show under one roof!

At 2 o'clock tomorrow afternoon the heavy doors of Madison Square Garden will swing open. This will be the "advance" opening, for the impatient fans may not wait till the "official" opening, which occurs at 7:30 that evening.

Radio show openings are famous. This one will be memorable. Congressman Wallace White from Maine, who fathered the present radio act, will be present as the guest of honor at the opening. Sir Thomas Lipton, noted English sportsman, and Count Felix von Luckner, German navy war leader, will give the ceremony an interesting international aspect.

During the broadcasting of this event, an annual radio ritual that takes place in the special studio built on the exposition floor, Miss Olive Snca, who has been chosen as the most beautiful radio artist in America, will, no doubt, be seen.

Beyond the portals of the broadcasting studio and into the paradise of displays, where several hundred manufacturers of sets and accessories of all sorts are bringing before the public eye the efforts of the technicians during the past year, thousands of hungry enthusiasts will run riot, appraise, comment and, foregoing

Radio is a complicated mystery. It is full of disturbing ramifications. This

(Continued on page twenty)

World Good Will

Program Interchange Best Peace Promotion by Nation Says Commerce Head

them. That at the same time they learn more about our nation, our people, our motives and ideals is greatly to be desired.

We may well expect that at some future date—one not so far in the future, at that—it will be possible to listen in on regularly scheduled features from distant parts of the earth. Latin-American growers will advertise their coffee or bananas around the world with characteristic programs from Brazil or Costa Rica. The spaghetti manufacturer will give us broadcasts from Milan and the jeweler will advertise his diamond stock by entraining us with a diamond miners' quartet from some South African field. Our warm summer evenings will be made more bearable as the refrigerator manufacturer brings to us a running description of a sub-zero blizzard scene in southern Argentina with pictures.

Radio the Peacemaker

These forecasts are not visionary. They are more than merely foreshadowed. The fact awaits on the final developments only, and, as in the past, we may assure ourselves that those devoted to the necessary research are fully capable of performing the necessary miracles. Their success is inevitable. More than one threatened international clash of the future will be "called on account of radio."

The surest foundation for the betterment of relations among nations is the groundwork of closer acquaintanceship among their respective peoples. Radio is one of the most potent and effective contributions in that good work.

Viennoise Tunes Featured

On WEAH Hour, Monday

Vienna, which is often called "the world capital of music," is the source from which will be drawn the program of the General Motors Family Party Monday, and in which Lewis James, Lanor, and Frank Black's Orchestra will be presented.

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N.Y. Herald Tribune
Sept 22, 1929

devices, such as straightline vol- controls, and power resistances of the national tuners, including the -30 and the new short wave thrill- are features that constructors will want to miss. Also featured will a remote control turning device and plate components for making any of receivers.

A complete new line of resistance power devices will also be shown. Aerovox and the International Resistance Company, with many unique applications for voltage ballast and set control.

There will be displayed the new uplon reproducer units for public address systems, as well as the new self-tuning line voltage control of operite.

The new Insuline electrostatic light- ing arrester may be of interest to a number of suburban listeners visiting a show.

Also there is bound to be a lot of interest shown in the complete system of line interference and man-made static eliminators displayed at the Suchmann headquarters.

"Screen-Grid" Popular

All of the new receivers for home building and the kits and circuits seem to center on the use of the new screen-grid valves in the radio amplifiers, together with linear power detection or peak-charge detection, coupled with either one or two stages of push-pull amplification at audio-frequency, with two -45 type valves in the output stage. Set builders are advised to shield their sets up to the teeth, with single-control features and trimmers much in evidence. It is interesting to note that this is something agreed upon by both the kit designers and the engineers who produce the designs for the ready-made receivers.

The S-M kits and parts are of even better construction and feature more radical improvements than past designs and should make mighty efficient receivers when put together efficiently.

Complete Parts for Amateurs

Although the mode for making one's own set is not so fashionable nowadays there is every chance for the experimenter to go one step farther this year in building even a better set than in the days when these receivers were the only kind obtainable, and when anybody who wanted a receiver either had to build it himself or have some one handy with tools and having a knowledge of construction, build it for him. There is plenty of new material to work with and the specialists in producing these ingenious parts and devices have done their best to conserve expense to make them as good as the best possible.

At any rate the experimenter will find in the show a veritable haven for the DX fan, and the tinkerer both in new apparatus and with accessories for making the old set work better.

Transmitting Apparatus

For the experienced amateur will be shown all types of transmitting apparatus, together with new tubes and meters for transmitting set adjustment that should enable him to build more efficient transmitters to help him in his ever expanding quest for reaching the corners of the earth with his eternal "CQ's" and straining ears.

I.C.A. ELECTROSTATIC
Double duty lightning arrester
of all stores
Shielded,
—new principle
reduces static

The Electrostatic is the new principle, totally shielded lightning arrester with special resistance and condenser and choke coil filter system, together with self protection fuse. The net result is nothing short of revolutionary. Absolute protection for both house and set. Dynamic static reduction and general improvement in reception. Fully guaranteed and backed by a \$100,000 insurance bond.

Get the new Electrostatic at your dealer's or send direct to:
INSULINE CORP. OF AMERICA
78-80 Conlandt Street, New York, N. Y.

Right: Electrad fixed resistor for use in plate circuits, and (above) volume control unit made by same manufacturer

Nikola Tesla Tells of New Radio Theories

(Continued from page one)

his experiments from 1887 to 1889 his object was to demonstrate a theory postulating a medium filling all space, called the ether, which was structureless, of inconceivable tenacity and yet solid and possessed of a rigidity incomparably greater than that of the hardest steel. He obtained certain results and the whole world acclaimed them as an experimental verification of that cherished theory. But in reality, what he observed tended to prove just its fallacy.

"I had maintained for many years before that such a medium as supposed could not exist, and that we must rather accept the view that all space is filled with a gaseous substance. On repeating the Hertz experiments with much improved and very powerful apparatus, I satisfied myself that what he had observed was nothing else but effects of longitudinal waves in a gaseous medium, that is to say, waves propagated by alternate compression and expansion. He had observed waves in the ether much of the nature of sound waves in air.

"Up to 1890, however, I did not succeed in obtaining a positive experimental proof of the existence of such a medium. But in that year I brought out a new form of vacuum tube capable of being charged to any desired potential, and operated it with effective pressures of about 4,000,000 volts. I produced cathodic and other rays of transcending intensity. The effects, according to my view, were due to minute particles of matter carrying enormous electrical charges, which, for want of a better name, I designated as matter not further decomposable. Subsequently those particles were called electrons.

"One of the first striking observations made with my tubes was that a purplish glow for several feet around the end of the tube was formed, and I readily ascertained that it was due to the escape of the charges of the particles as soon as they passed out into the air; for it was only in a nearly perfect vacuum that these charges could be confined to them. The coronal discharge proved that there must be a medium besides air in the space, composed of particles immeasurably smaller

than those of air, as otherwise such a discharge would not be possible. On further investigation I found that this gas was so light that a volume equal to that of the earth would weigh only about one-twentieth of a pound.

"The velocity of any sound wave depends on a certain ratio between elasticity and density, and for this ether or universal gas the ratio is 800,000-000,000 times greater than for air. This means that the velocity of the sound waves propagated through the ether is about 300,000 times greater than that of the sound waves in air, which travel at approximately 1,086 feet a second. Consequently the speed in ether is 800,000X1,085 feet, or 185,000 miles, and this is the speed of light.

"As the waves of this kind are all the more penetrative the shorter they are, I have for years urged the wireless experts to use such waves in order to get good results, but it took a long time before they settled upon this practice.

"Although the world is still skeptical as to the feasibility of my undertaking, I note that some advanced experts, at least, share my views, and I hope that before long wireless power transmission will be as common as transmission by wires."

"According to Mr. Tesla, the present broadcasting station does not propagate Herizlian waves, as has always been supposed, but acts more like an "ether whistle"—transmitting waves through the ether similar to the waves transmitted by an ordinary whistle through air. He also expressed his disbelief in the Heavenside layer, and

claimed that the reflection of waves back toward the earth was due to the change of medium encountered at the vacuum boundary of the atmosphere.

At Colorado Springs, about thirty years ago, this scientist had a Tesla coil seventy-five feet in diameter, which produced voltages above 12,000,000, and sparks over 100 feet long. Elec-

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52 VESSEY ST., N. Y. C.

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RADIO is calling for men... trained men. Thousands of good jobs are now open. Positions that pay from \$2,000 and up a year. Prepare at once for the success you've longed for. Thrilling work, easy hours, vacations with pay and an opportunity to see the world.

Training takes but a few hours a day. This big resident school located in the heart of New York gives you all you need to know to insure your success in every phase of radio, including servicing, broadcasting and airplane radio equipment. You study under the personal instruction of I.C.A. trained men. You have access to a vast store of apparatus. You learn to solve every radio problem with your own hands and brain. That's why you quickly get the commercial confidence that commands big pay.

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Editorial Comment

Radio Waves and the Transmission of Electrical Energy for Power

Dr. E. F. W. ALEXANDERSON, consulting engineer of the General Electric Company and the Radio Corporation of America, in an address at the annual dinner of the Sigma Xi Society at the Hotel Astor in New York City, last April, predicted that the radio wave would soon be used for the control of vast amounts of power, and would supersede much of the cumbersome machinery now used in power production and transmission.

"The electric power industry cannot remain much longer untouched by the discoveries of radio," he said. "It is just waiting until this new knowledge has been widened and matured, so that it can be put into use on a wider scale, and this is the real significance of the entrance of the electrical industry into radio, and the latest branch of it, television."

Ten days after Dr. Alexander's startling prediction, electric lamps, held or suspended in the air without any connection to power wires, were made to glow brightly when high frequency waves were directed upon them in a demonstration of power transmission by radio by two Westinghouse engineers, Dr. Phillips Thomas and Dr. Harvey C. Rentschler, before the New York Electrical Society in New York City. Dr. Rentschler also displayed a novel radio furnace, in which metallic tungsten, among the most infusible of all metals, was heated white hot in an instant by the radio waves.

"We may visualize," said Dr. Thomas at this demonstration, "a parallel beam of radiation ten centimeters (four inches) across, along which is being sent ten kilowatts of energy. What sort of effects shall we find? Will this be the means for delivering energy for heat and light to individual houses? Dr. Nikola Tesla had a similar idea several years ago. Later improvements in the radio art make it interesting to consider such a possibility once more."

Guglielmo Marconi, inventor of the Marconi wireless system, while visiting this country last October, for the first time in several years, delivered an address on radio before a notable gathering of scientists at the Engineering Societies Building in New York City, in which he said:

"I hope I will not be thought too visionary if I say that it may be possible that some day electric waves may also be used for the transmission of power, should we succeed in perfecting devices for projecting the radiation in parallel beams in such a

manner as to minimize their dispersion and diffusion into space."

Dr. Nikola Tesla, one of the earliest pioneers in wireless, inventor of the alternating current system of power transmission, the induction motor, and many other notable electrical devices, the day before Marconi made the foregoing appeal "not to be thought too visionary," wrote a modest but direct statement of what he has already accomplished. Dr. Tesla said:

"The transmission of power without wires is not a theory or a mere possibility, as it appears to most people, but a fact demonstrated by me in experiments which have extended for years. The recent demonstrations of a number of experts with very short waves, have created the impression that power will be eventually transmitted by such means. In reality, experiments of this kind are the very denial of the possibility of economic transmission of energy. A concentration of energy such as I attain in my wireless power system can or will ever be achieved through the instrumentality of reflectors, for in transmitting energy in this manner the receiver can collect only an amount proportionate to the area exposed to the rays, while in my system it draws the energy from an immense reservoir in ever so much greater quantity. My plans for a power plant have been developed to the point of application, and I am using every effort to give to the world this, my best and most important work, as soon as possible. I have in view a number of places which seem well suited for the purpose, but my warmest wish is to transmit power from Niagara Falls, where the first triumph with my alternating system was achieved."

And meantime the entire world, with its vast resources of electrical energy in inland lakes, rivers and waterfalls, coal, wind, ocean waves and heat of the sun going to waste in billions of horsepower every day, waits patiently while radio scientists monkey with bulbs and reflectors to carry giant loads of chained lightning. It is about time some of them wake up to the fact that while they are shuffling around with little short-wave reflector sparks, Dr. Tesla has experimented with tremendous electrical power flashes, each more than one hundred and fifty feet in continuous length, under perfect wireless control. Dr. Tesla has said so himself, his veracity is unquestioned, and his record of great accomplishments thus far backs him up. The "big business" end of the electrical industry ought to dig Dr. Tesla out of his laboratories long enough to say to him "Show me!" for there is enough money in it to suit even the wildest dreamers of Wall Street if he is right.

Experimenters Have Been Devoting a Great Deal of Their Time Trying to Solve This Problem

RADIO has sprung "technically fast" from technical obscurity to a popular utility, through broadcasting, and to many it seems to have reached its limit of perfection and usefulness. Transmitting stations have arisen in numbers sufficient to intermesh their waves in a blanket which covers every acre of the country. Receiving sets are so thick that their antennae spider-web the horizon line. The broadcast programs are in portions of the cycle above the reach of the most fastidious. What more could one want? What more is possible?

In answer to those questions the echoes of a dozen unsolved problems assert themselves. How can static be eliminated? Who will pay for future broadcasting? When can the owner of a set be freed from technical worry? How can receiving set upkeep be minimized? How can distortion be done away with? What are the limiting factors of super-power?

The question of who will pay for broadcasting is an old one, and misleading. The people who use the sets, of course, always pay; so matter what distribution or collection system is used. It resolves itself to a question, rather, of how, by what specific means, will the expenses of broadcasting be paid. At present the sale of sets and parts, and of general merchandise through a national advertising-

As it stands, the system is backwards. For all the power that is used in the six hundred or so transmitting stations of the country, at least twenty times as much is used in the aggregate of receiving sets. Perhaps this before has been overlooked but it stands out definitely. Assuming that the six hundred stations broadcast with an average of 1,000 watts, and that two million tube receiving sets consume an average of 0 watts each—which is low, by the way—then a total of 600,000 watts would be propagated and a total of 12,000,000 watts be used to make it audible to the receivers.

That fundamental weakness is a symptom of the necessity of fire and other time sets—time expensive white elephants which advanced from most men have in order to meet certain particular requirements. If appreciable paper could be conveyed to the receiving jet, a single tube, or even a crystal, could do the work of an eight-tube super-jet tube; at the same time requiring greater ease of control and less distortion. The works of a set then would not cost more than \$10 or \$15, and what white expense there was would be chiefly for the actual receiving and timing sets.

The cost of bare maintenance of a three-tube set, tube and battery cost—may amount to about \$20 a year. If fully paid for, the cost is less.

If but less than a single watt were available at the receiver no tubes would be needed, even for operating a loud-speaker. If energy could be transmitted efficiently a total of 2,000 kilowatts would suffice for all our present needs and could be sent from four super stations of 500 kilowatts each.

Then with the best of paid talent the annual cost of both the transmitting and receiving set up here could well stay below \$15,000,000.

But with our present system this is obviously impossible. The waves sent out are chiefly vibrations, and because they are such the greatest part of their energy is irrecoverable.

ly concentrate the waves into a beam, the recoverable energy is increased but in the same degree the efficiency is decreased. The more concentrated the waves are, the more they are dispersed when they are released.

It is one thing to say that diseases that are also the main cause of plastic trouble, atmospheric electricity will always be with us, and its nature is so closely allied to that of radio waves that it cannot be eliminated in any practical way so long as its intensity approaches our ears. But of the impurities that are wanted. The only satisfactory solution to the problem may be to be a combination of a plastic

icular point. The ones that are greatest
always win.

Distortion, too, is due chiefly to a lack of antenna energy in the receiving set, for it comes through the inaccuracy with which it regenerates, through small differences in tube characteristics and through in-circuit transformers. If there was the energy available at the antenna that is now available at the output of the in-circuit transformer, the amplifier could be eliminated, and with it the distortion that it produces.

One often reads in the press the announcement that some one at last has found a means to send power by radio. It is a rare true the industry of the world would be revolutionized. As facts stand, it has not as yet been practically accomplished. Lamps can be lit by the radiation of the ordinary transmitter over a few short distances, but the efficiency is so extremely small that commercial promotion of the phenomenon would be prohibitive.

Nikola Tesla was the first to try to solve the problem, and his success is ever achieved. It will doubtless be by his system, into which he has put so much tireless labor. Professor Heilmann, Lord Kelvin and a number of able contemporaries believe the plan entirely feasible. Apparatus could be developed to generate and control the proper kind and intensity of electricity. Tesla has long dreamed this, and the system seems only a question of time.

By James S. Caulfield

Astoc, A. I. E. E.

CONFIDENTIAL

LIGHT, HEAT AND POWER WILL NOT BE
DEARER THE SLIGHT OF CONSUMERS
TODAY. THE PRICE OF A TON OF COAL

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NEXT WE

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A Logical Discussion on the Transmission of Power by Radio

Experimenters Have Been Devoting a Great Deal of Their Time Trying to Solve This Problem

By KENNETH M. SWEZEY

RADIO has sprung unusually fast from technical obscurity to a popular utility, through broadcasting, and to many it seems to have reached its limit of perfection and usefulness. Transmitting stations have arisen in numbers sufficient to intermesh their waves in a blanket which covers every acre of the country. Receiving sets are so thick that their antennae spider-web the horizon line. The broadcast programs are in portions of the cycle above the reach of the most fastidious. What more could one want? What more is possible?

In answer to those questions the echoes of a dozen unsolved problems assert themselves. How can static be eliminated? Who will pay for future broadcasting? When can the owner of a set be freed from technical worry? How can receiving set upkeep be minimized? How can distortion be done away with? What are the limiting factors of super-power?

Important Question

The question of who will pay for broadcasting is an old one, and misleading. The people who use the sets, of course, always pay; no matter what distribution or collection system is used. It resolves itself to a question, rather, of how, by what specific means, will the expenses of broadcasting be paid. At present the sale of sets and parts, and of general merchandise through ethical advertisement.

As it stands, the system is backwards. For all the power that is used in the six hundred or so transmitting stations of the country, at least twenty times as much is used in the aggregate of receiving sets. Perhaps this before has been overlooked but it stands out defiantly. Assuming that the six hundred stations broadcast with an average of 1,000 watts, and that two million tube receiving sets consume an average of 6 watts each—which is low, by the way—then a total of 600,000 watts would be propagated and a total of 12,000,000 watts be used to make it audible at the receivers.

A Possible Solution

That fundamental weakness is responsible for the necessity of five and eight tube sets—those expensive white elephants which advanced fans must now have in order to meet certain particular requirements. If appreciable power could be conveyed to the receiving set a single tube, or even a crystal, could do the work of an eight-tube super-heterodyne; at the same time securing greater ease of control and less distortion. The works of a set then would need not cost more than \$10 or \$15, and what upkeep expense there was would be chiefly for the actual broadcasting service.

The cost of bare maintenance of a three-tube set—tubes, and battery cost—may amount to about \$20 a year. Maintaining this for five years—

If but less than a single watt were available at the receiver no tubes would be needed, even for operating a loud-speaker. If energy could be transmitted efficiently a total of 2,000 kilowatts would suffice for all our present needs and could be sent from four super stations of 500 kilowatts each.

Then with the best of paid talent the annual cost of both the transmitting and receiving set upkeep could well stay below \$15,000,000.

But with our present system this is obviously impossible. The waves sent out are chiefly radiations, and because they are that the greatest part of their energy is irretrievable loss.

How a Transmitter

By concentrating the energy in a beam the receiver can be made to receive it, but in the case of radio waves the energy is broadcast in all directions, and the receiver must be able to receive it.

It is this lack of power, weakness that is also the main cause of static trouble. Atmospheric electricity will always be with us, and its nature is so closely allied to that of radio waves that it cannot be eliminated in any practical way so long as its intensity approaches and exceeds that of the impulses that are wanted. The or significant solution to the problem seems to be a method of increasing the available

INVENTOR

By James S. Calk

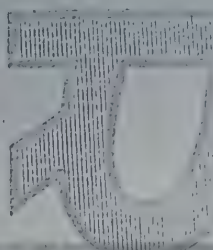
Assoc., A. I. E. E.

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RIGHT, heat and power without the means of the slave of complete

Testa breaks alliance of many years with the system of his system for the without wires. By means of this possible to light homes, office and power to run ships, airplanes and trial machinery. He is now making the action of his invention. The Testa was born in Berlin and came to the University of Illinois, 1907. Degrees from Yale and Ohio State in the polytechnic in Vienna, Austria in 1911 and 1912 and first

Radio



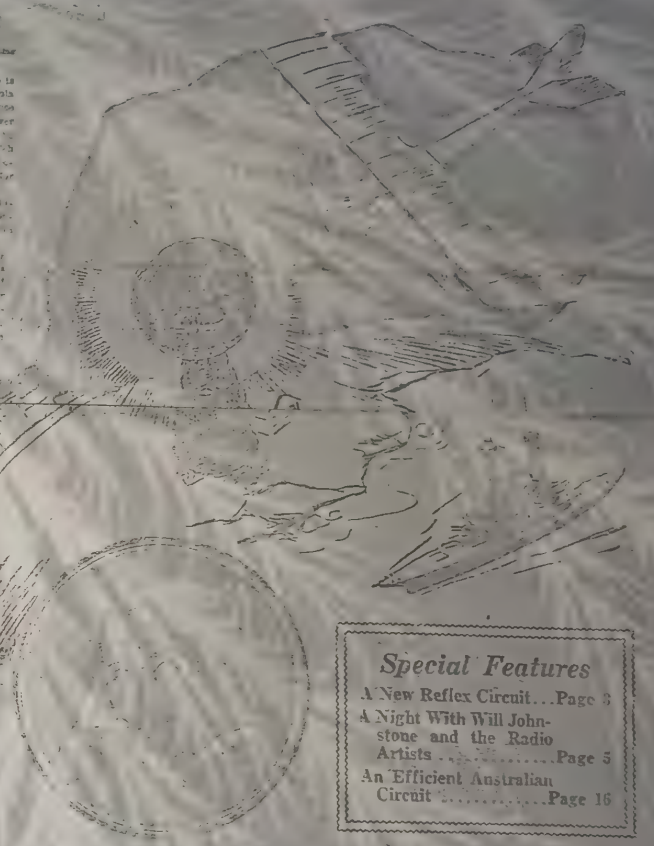
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INVENTOR ANNOUNCES FINAL SUCCESS OF EXPERIMENTS
BEGUN THIRTY YEARS AGO

By James S. Caulfield
Assoc., A. I. E. E.

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Company

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Special Features

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stone and the Radio
ArtistsPage 5
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CircuitPage 16

After an interview with First Deputy Chairman of the Council of Ministers, Mr. V. A. Kuznetsov, who also recently stated that the future expansion of these low productions of nature that have been termed "oil oases." His individuality is concrete and aimed at the embodiment of concentrated and sometimes abstract ideas. This is his life work and his pleasure. He is not a person who lives in the light of imagination, for which nothing is impossible, nothing which cannot at some time be realized.

[illegible]

a dreamer and others called his schemes ridiculous. On close inspection, however, will be found to be twenty-five to one hundred years ahead of time. Here is an example: Back in 1934 The Evening World printed an exclusive interview with Tesla, at which time he stated that the power of Niagara Falls would be developed. The public thought light of it and in a short time it was forgotten. However, some years later the Falls were developed and at the present time plans are being made to transmit power from Niagara to supply the New England States.

In the same year Tels, through the medium of the paper, announced that he had developed a system of communication for blind persons. This was three years earlier than the famous Marconi's experiments. Other inventions of the music-theoretician made it possible to transmit an alternative method of electric development of systems for studying extra-sensory perception and to drive on a group of all those who had been blind.

(Continued on Second Page)

(Continued on Second Page)

Electricity is a youthful giant. Not yet do we know its power.

WHAT WE WILL DO WITH ELECTRICITY

BY
NIKOLA TESLA

WITH DECORATIONS BY
R. F. HEINRICH



ANY a would-be discoverer, failing in his efforts, has felt the regret to have been born at a time when everything has been already accomplished and nothing is left to be done. This erroneous impression that, as we are advancing, the possibilities of invention are being exhausted, is not uncommon. In reality it is just the opposite. Spencer has conveyed to us when he likened civilization to a lamp which throws out in the darkness the light and the larger the lamp is its dark boundary. It is to say, that the more we know, the more we become in the absolute only through enlightenment. The most gratifying realization of our limitations is the continuous prospect of greater prospects. We are going on but the truth is that we have successfully expanded our knowledge. What electricity is nothing but a force that is stored.

At this time there are now innumerable ways in old-fashioned ways which are able to be used in new and many methods. So great are the possibilities of electricity that whenever an engineer advises the use of electricity in a new way, it is of the largest of this valuable stored energy industrial and commercial records in perfect evidence. It is efficient to do anything for one thing, it is to be noted that it is a great saving of its cost. There is an enormous saving in transportation of coal which could be reduced through the adoption of a comprehensive electrical plan in all these operations. The market value of the yearly product could be easily doubled and a immense sum added to the revenues of the country. What inferior grades, millions of tons of which are being thrown away, might be turned to good use.

and mineral oil, the pecuniary loss of which amounts to hundreds of millions of dollars. In the very near future such waste will be looked upon as criminal and the introduction of the new methods will be forced upon the owners of such properties. Here, then, is an immense field for the use of electricity in many ways, vast industries which are bound to be revolutionized through its extensive application.

To give another example, I may refer to the manufacture of iron and steel which is carried on, in this country, on a scale truly colossal. During the last year, notwithstanding unfavorable business conditions, 31,000,000 tons of steel have been produced. It would lead too far to dwell on the possibilities of electrical improvements in the manufacturing processes themselves and I will only indicate what is likely to be accomplished in using the waste gases from the coke ovens and blast furnaces to generate electricity for industrial purposes.

Since in the production of pigiron, for every ton about one ton of coke is employed, the yearly consumption of coke may be put at 31,000,000 tons. The combustion in the blast furnaces yields, per minute, 7,000,000 cubic feet of gas of a heating value of 110 B. T. units per cubic foot. Of this total, without making special provision, 4,000,000 cubic feet may be made available for power purposes. If all the heat energy of this gas could be transformed into mechanical effort it would develop 10,350,000 horsepower. This result is impossible but it is perfectly practicable to obtain 2,500,000 horsepower electrical energy at the terminals of the dynamos.

Utilization of Waste Gases.

IN the manufacture of coke approximately 9,400 cubic feet of gas are evolved per ton of coal. This gas is excellent for power purposes, having an average heating value of 600 B. T. units, but very little is now used in engines, largely because of their great cost and other imperfections. A ton of coke requires about 132 tons of American coal, hence the total coal consumption per annum on the above basis is nearly 41,000,000 tons which give, per minute, 7,300,000 cubic feet of gas. Assuming the yield of surplus or rich gas to be 333,000 cubic feet, the balance of 400,000 cubic feet could be used in gas engines. The heat contents would be, theoretically, sufficient to develop 6,600,000 horsepower of which 1,500,000 horsepower could be obtained in the form of electric energy.

I have devoted much thought to this industrial proposition and find that with new,

efficient, extremely cheap and simple thermodynamic transformers not less than 1,000,000 horsepower could be developed in electric generators by utilizing the heat of these gases, which, if not entirely wasted, are only in part and inefficiently employed.

With systematic improvements and refinements much better results could be secured and an annual revenue of \$50,000,000, or more, derived. The electrical energy could be advantageously used in the fixation of atmospheric nitrogen and production of fertilizers for which there is an unlimited demand and the manufacture of which is restricted here on account of the high cost of power. I expect confidently the practical realization of this project in the very near future and look to exceptionally rapid electrical development in this direction.

WATER-POWER offers great opportunities for novel electrical applications, particularly in the department of electro-chemistry. The harnessing of waterfalls is the most economical method known for drawing energy from the sun. This is due to the fact that both water and electricity are incompressible. The net efficiency of the hydro-electric process can be as high as eighty-five per cent. The initial outlay is generally great but the cost of maintenance is small and the conveniences offered ideal. My alternating system is invariably employed and so far about 7,000,000 horsepower have been developed. As generally used we do not get more than six hundredths of a horsepower per ton of coal per year, this water energy is therefore equivalent to that obtainable from an annual supply of 120,000,000 tons of coal, which is about twenty-five per cent. of the total output in the United States. The estimate is conservative and in view of the immense waste of coal, fifty per cent. may be a closer guess.

We get better appreciation of the tremendous value of this power in our economic development when we remember that unlike fuel, which demands a terrible sacrifice of human energy and is consumed, it is supplied without effort and destruction of material and equals the mechanical performance of 150,000,000 men—one and one-half times the entire population of this country. These figures are imposing, nevertheless, we have only begun the exploitation of this vast national resource.

There are two chief limitations at present: one in the availability of the energy, the other in its transmission to distance. The theoretical power of the falling water is enormous. If

The writer asked Prof. Teda if it was possible to

"I will illustrate by an example. Suppose that the wires are fed from a generator of alternating currents and used to light an incandescent lamp of some distance. If the vibrations of the current are very slow there will be virtually no energy radiated from the conductors. Imagine now that the current is made to pulsate faster and faster. Then in the same medium

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[Faint handwritten notes, likely bleed-through from the reverse side.]

1. The first set of data is the number of people who have been vaccinated against the disease. This is a measure of the effectiveness of the vaccine.

... 400,000,000,000 a year.
... run as high as \$4,000 for the
... country the broadcasting system.

The Radio Beginner's Series

[illegible]

the. Back on it, the L X-510 takes only 15 seconds on the plate requires no manual recharging while a good battery of 12 cells to hold the plate current down to 100 milliamperes. Little else is great as there is no way to see what the L X-510 is doing after the voltage without any battery. The L X-510, even at 90 volts, has a power of 100 watts and a battery of 10 cells. The

be no better, for there would be no way of having it, apart from the cost of the apparatus. If there were but two or three main centers, and that a fairly large one, if apparatus could be sufficiently developed so that it could be started, and four or five broadcasting stations for the entire country, the question of payment for broadcasting could be more easily met. Apparatus could be rented, like Bell telephones, or sold outright, like standard typewriters, and the user could at all times be sure of reliable maintenance service. The several transmitters could afford to furnish the best of programs, for they would have a definite and continuous source of revenue.

Distance Wave May Travel

Undoubtedly, with transmitting and receiving apparatus which we have immediately at hand, this could be accomplished with passable success. But the equipment would be expensive and tremendously limited. Super-power would have to be used at the transmitter, and the sensitivity of the receiving sets increased with the increase in distance. As the distance which a Hertz wave transmitter may cover varies approximately with the square of the power used, it is obvious that the wattage would have to exceed that now in use manifold. Unless the wave lengths that were used were widely separated, receiving sets within the vicinity of these powerful transmitters would be interfered with beyond remedy.

In true radio transmission it would seem to the writer that a goodly portion of the transmitted energy should be recoverable. In our present system it is almost a total loss. One could realize this more fully if all receiving sets had only crystals. From the most powerful of modern transmitters scarcely ever can a crystal set receive satisfactorily over more than a hundred miles. If it had not been for the invention of the vacuum tube detector, oscillator and amplifier the entire system would have been long ago pronounced a failure, or at least relegated to a "hatted" corner and ship-to-ship code service.

emissions and draw a large B battery in time. Even as it is the UX-110 tube 125 volts on the plate requires as normal operating voltage a grid battery of 15 volts to hold the plate current down to a milliamperes. The plate current is or four times what the UX-110A requires. The UX-210, even at 90 volts, has normal operating grid voltage of 4.5 volts. The UX-120, a new tube, has only 1.5 volts on the plate, requires a normal operating grid voltage of 2.5 to keep the plate current down to 6.5 milliamperes. The UX-112 at 90 volts on the plate requires six volts on the grid. All three of the new tubes are C battery tubes, while on the present tubes in use the C battery is a refinement and economy measure much advocated, but not used by any great percentage of set owners.

Reducing B Battery Current

Another way of securing amplification with a minimum of B battery drainage is the so-called "one filter amplifier" in (1) of the figure. Here the coupling between the tubes is in the millions of ohms, variable leaks being used both for tube coupling and for grid leaks. Very low plate potential is used on the detector and, because of the tremendous resistance of the coupling, there is substantially no B bias on either of the next two tubes, but 90 volts on the last tube. The stopping condensers are .0005 mfd.

In place of either leaks, resistances, choke coils or transformers, the writer has frequently used and suggested coupling two tubes with a third tube, using the plate to filament resistance of the third tube as a coupling resistance, the diagram being shown at (2). Here we have a detector with one step of straight transformer-coupled audio. The first audio tube is coupled with the second audio tube through a tube placed between them as a resistor. This tube requires a separate A battery, as shown. It cannot be used with the same A battery as the

other tube. The diagram of the filament will reveal the connection from plate to filament and from grid to filament. The resistance to ground is caused by use of a C battery or a transformer. The diagram of the filament is connected to ground at all. The voltage should be large, as in resistance being preferable, although as low as 90 volts will work.

This is a novel use for the tube. The 90 volts is not only across the filament, the rectifier tubes, but it passes through the tube and applies on the plate of the first audio tube. Of course, instead of 90 volts you can use up to 150 volts with benefit. Moreover, it is not essential to have a stage of transformer coupling precede this, and next week we will finally come around to the constant current amplifier, which is based on this simple tube resistance coupling with provisions for impressing a signal voltage on the resistance tube. At that time also we will reprint the diagram for a push-pull amplifier to complete the record.

Many times in the past we have printed the diagram for choke coil amplification. This is identical with the last two diagrams of last week's page, except that choke coils are used in place of resistance couplings. Many devices have been impressed into use as choke coils for this purpose. The secondary of an audio transformer, the primary of a bell ringing transformer, the Ford spark coil, various magnet windings, have all been used. Probably better than any of these is an audio transformer with primary and secondary connected in series aiding, making one coil of the two. You will have to reverse the connection between primary and secondary to be sure they are in the right order, but it makes no difference which end is connected to B battery and which to plate. A blocking condenser and a leak must be used as in resistance coupling.

Pumping Systems

In an radio transmitter Tesla mounts a huge capacity, having a metal enveloping surface that prevents radiation, on top of a tower and starts up an electrical pumping system, pumping electricity into and out of the earth. The pressure of the tributes itself over the entire globe, though it were a sphere of but moderate dimensions, and by using receiving antennas at distant parts of the world connected at one end to the earth and the other to a similar but smaller antenna, the energy can be recovered with no loss. Distance need not be reckoned any more than it need be reckoned in a circuit with resistive elements.

If Tesla's system works as well practically as it does theoretically its application to broadcasting will go far toward relieving all those problems which were first suggested. It would permit of super-power transmission, with all of the good qualities and none of those that now put a limit to its effectiveness.

Notwithstanding the development of hundreds of new circuits, there has not been a single basic and radical improvement on our present radio system since De Forest invented the three-element vacuum tube. Props have been devised and both transmitting and receiving sets have been pushed to the limits of their capacity, but as for something really new it has yet to appear. The condition is a definite indication that the point of the flattening of the curve has been reached.

...the rain falls an average height of 15,000 feet, and an annual precipitation of thirty-three inches, the twenty-four hour power per square mile is over 4,000, and for the whole area of the United States more than 12,000,000,000 horsepower. As a matter of fact the larger portion of the potential energy is used in air-friction. This, while disappointing to the economist, is a fortunate circumstance for otherwise the drops would reach the ground with a speed of 800 feet per second, sufficient to raise blisters on our bodies, while hail would be positively deadly. Most of the water which is available for power purposes comes from a height of about 2,000 feet and represents over one and one-half billion horsepower, but we are only able to use an average of, say, one hundred feet which means that if all the water power in this country were harnessed under the existing conditions only 80,000 horsepower could be obtained.

To Control Precipitation of Moisture.

BUT the time is very near when we shall have the precipitation of the moisture of the atmosphere under complete control and then it will be possible to draw unlimited quantities of water from the oceans, develop any desired amount of energy and completely transform the globe by irrigation and intensive farming. A greater achievement of Man through the medium of electricity can hardly be imagined.

The present limitations in the transmission of power to distance will be overcome in two ways; through the adoption of underground conductors insulated by power and through the introduction of the wireless art. The first plan I have advanced years ago. The underlying principle is to convey through a tubular conductor hydrogen at a very low temperature, freeze the surrounding material and thus secure a perfect insulation by indirect use of electric energy. In this manner the power derived from falls can be transmitted to distances of hundreds of miles with the highest economy and at a small cost. This insulation is sure to greatly extend the fields of electrical application. As to the wireless method we have only limited by the dimensions of this planet. In view of assertions of some misinformed experts to the effect that in the wireless system I have perfected the power of the transmitter is dissipated in all directions, I wish to be emphatic in my statement that such is not the case. The energy goes only to the place where it is needed and to no other.

When these advanced ideas are practically realized we shall get the full benefit of water-power and it will become our chief dependence in the supply of electricity for domestic, public and other uses in the arts of peace and war.

In the great departments of electric light and power immense opportunities are offered through the introduction of all kinds of novel devices which can be attached to the circuits at convenient hours for the purpose of equalizing the loads and increasing the revenues from the plants. I have myself knowledge of a number of new appliances of this kind. The most important among them is probably an electrical ice machine which obviates entirely the use of dangerous and otherwise objectionable chemicals. The new machine will also require absolutely no attention and will be extremely economical in operation, so that the refrigeration will be effected very cheaply and conveniently in every household. An interesting fountain, electrically operated, has been brought out which is likely to be extensively introduced and will afford an unusual and pleasing sight in squares, parks, hotels and residences. Cooking devices for all domestic purposes are being provided and there is great demand for practical designs and suggestions in this field. The same may be stated of electric signs and other attractive means of advertising which can be electrically operated. Some of the effects which it is possible to produce by electric currents are wonderful and lend themselves to exhibitions, and there is no doubt that much can be done in that direction. Theaters, public halls, and private dwellings are in need of a great many devices and instruments for convenience and offer ample opportunities to an ingenious and practical inventor.

A VAST and absolutely untouched field is the use of electricity for the propulsion of ships. The leading electrical company in this country has just equipped a large vessel with high speed turbines and electric motors and has achieved a signal success. Applications of this kind will multiply at a rapid rate for the advantages of the electrical drive are now patent to everybody. In this connection gyroscopic apparatus will probably play an important part as its general adoption on vessels is sure to come. Very little has yet been done in the introduction of the electrical drive in the various branches of industry and manufacture and the prospects are unlimited. Books have already been written on the agri-

cultural use of electricity, but the time is not nearly anything has been practically done. The beneficial effects of electricity of high tension have been unmistakably established and a revolution will be brought about through the extensive adoption of agricultural electrical apparatus. The safeguarding of forests against fires, the destruction of microbes, insects and rodents will, in due course, be accomplished by electrical means.

In the near future we shall see a great many new uses of electricity finding at safety, particularly of vessels at sea. We shall have electrical instruments for preventing collision and we shall even be able to dispense fog by electric force and powerful and penetrative rays. I am hopeful that within the next few years wireless plants will be installed for the purpose of illuminating the ocean. The object is perfectly feasible and if carried out will contribute more than any other provision to the safety of property and human lives at sea. The same plant could also produce stationary electrical waves and enable vessels to get at any time accurate bearings and other valuable practical data without reference to the present means. It could also be used for time signalling and many other purposes of similar nature.

ELECTRO-THERAPY is another great field in which there are unlimited possibilities for electrical applications. High frequency currents especially have a great future. The time will come when this form of electrical energy will be available in every private dwelling. I consider it quite possible that through their surface actions we may do away with the customary bath as the cleaning of the body can be instantaneously effected simply by connecting it to a source of currents or electric energy of very high potential which results in the throwing off of dust or any small particles adhering to the skin. Such a dry bath, besides being convenient and thrifting, would also be of beneficial therapeutic influence. New electric devices for use of the deaf and blind are coming and will be a blessing to the afflicted.

In the prevention of crime electrical instruments will soon become an important part of the city and country police. The time will come when to town to rest and go well.

THE present international conflict.

A powerful stimulus to invention of devices and implements of warfare. An electric gun will soon be brought out, the wonder is that it was not produced long ago. Dirigibles and aeroplanes will be equipped with small electric generators of high tension from which the deadly currents will be conveyed through thin wires to the ground. Battleships and submarines will be provided with electric and magnetic feelers so delicate that the approach of any body under water or in darkness will be detected. Torpedoes and floating mines are almost in sight which will direct themselves automatically and without fail get in fatal contact with the object to be destroyed. The art of Teletautonomies or wireless control of automatic machines at a distance will play a very important part in future wars and, possibly, in the next phases of the present one. Such contrivances which act as if endowed with intelligence will be used in innumerable ways for attack as well as defense. They may take the shape of aeroplanes, balloons, automobiles, surface or under water boats or any other form according to the requirement in each special case and will be of greater range and destructiveness than the implements now employed. I believe that the teletautonomic aerial torpedo will make the large siege gun, on which so much dependence is placed at present, obsolete. A volume might be filled with such suggestions without exhausting the possibilities. The advance even under the conditions existing is rapid enough, but when the wireless transmission of energy for general use becomes a practical fact, the human progress will assume the character of a hurricane. So all our packing is the importance of this marvelous art to the future existence and welfare of the human race that every enlightened person should have a clear idea of the chief factors bearing on its development.

WE have at our disposal three main sources of life-sustaining energy: fuel, water power and the heat of the sun's rays. Engineers often speak of harnessing the tides, but the dis-

covery of a time for which to flash any image formed in the and render it visible at any place of perfection of this means of communication. Unfortunately, it is true, low breakers will also have the advantage to further their reform.

Telegraphic Photographs.

GREAT Improvement.

Telegraphy and telephony. The receiving device which will be almost without limit, will come through aerial lines, with reducing the cost of transmission in a very large measure. This improvement will be a great step forward in all its branches.

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not distant it will be possible to form in the course of a few years a new generation of men, who will be able to take the place of the old generation, and will be able to do so with more energy and more vigor than the old generation.

For the purpose of this study, the following hypotheses were formulated:

End Points and Statistical Analysis

With a powerful magnetic field, an electric fan will run on the air, the wheels of a car will be produced from the air, and a telephone will be operated by electric generators of the air, from which the deadly energy will be conveyed through the wires to the ground. Battleships and submarines will be provided with electric magnetic feelers so sensitive that the approach of any body near will be in darkness will be detected, torpedoes and floating mines will come in sight which will correct themselves automatically and without danger of fatal contact with the object to be destroyed. The act of observation or wireless control of action in machines at a distance will play an important part in future wars, as possible, in the next phase of the present one. Such contrivances will act as if endowed with intelligence, will be used in formidable warfare, attack as well as defense. They will be the source of generating steam, automobiles, airplanes, water boats or any other conveyance according to the requirements of the special case and will be of great range and destructiveness. The implements now employed, that the telephone, the electric fan, will make one have a new idea of which so much depends, and which, at present, obsolete, is of no use, or filled with iron, is of no use, and exhausts the possibilities of the machine even under the conditions of being so rapid enough, but when the wireless transmission of energy is general use becomes a practicality, the human phyzique will undergo the character of a hurricane, the speed passing in the importance of the human phyzique in the future existence of the human race, and the welfare of the human race, that every enlightened person should have a clear idea of the thing future, and the development of the thing future, as the general human race, to come. Very little done in the introduction of the electric in the various branches of industry and the prospect are unlimited, as already been written on the agriculture.

WE have at our disposal three main sources of furnishing energy, fuel, water power and the heat of the sun's rays. Engineers often speak of harnessing the tides, but the

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LETTERS TO THE EDITOR

TESLA ON WIRELESS.

Electrical Inventor Thinks Marconi's Plants Inefficient.

To the Editor of The Tribune.

But in no way are wireless art is concerned there is a vast difference between the great inventor Thomas A. Edison and myself, integrity in my favor. Mr. Edison knows little of the theory and practice of electrical vibrations; I have, in this special field, probably more experience than any of my contemporaries. That you are not as yet able to import your visions by wireless telephone, to some subscriber in any other part of the world, however remote, and that the press of your valuable paper are not operated by wireless power is largely due to your own effort and that of some of your distinguished confreres of this city, and the efficient assistance you have received from my celebrated colleagues, Thomas A. Edison, and Michael I. Pupin, assistant consulting wireless engineer. But it was all welcome to me. Diligently devoting resource.

The transmission across the Atlantic was not made by any device of Mr. Marconi's, but by my system of wireless transmission of energy, and I have already given notice by cable to my friend Sir James DeWear and the royal institution of this fact. I shall also request some eminent men of science to take careful note of the whole apparatus, its mode of operation and qualitative performance, so as to make possible its exact reproduction and a repetition of the experiments. This request is entirely impersonal. I am a citizen of the United States, and I know that the time will come when my busy fellow citizens, too absorbed in commercial pursuits to think of posterity, will honor my memory. A measurement of the time interval taken in the passage of the signal necessary to the full and positive demonstration will show that the current crosses the ocean with a mean speed of 280,000 miles a second.

The Marcell plant is inefficient, and do not lend themselves to the practice of two discoveries or more, the "wave of individualization," the "waves of non-interfering and non-interferable," the "waves of non-interfering and non-interferable," and the "stationary waves" which annihilate difference absolutely and make the whole ether equivalent to a conductor devoid of resistance. Were it not for this deficiency, the number of words a minute could be increased at will by "individualizing."

You have already commented upon this advance in terms which have caused me no misapprehension, in view of your normal attitude. The underlying principle is to combine a number of vibrations, preferably slightly displaced, to reduce further the danger of interference, active as well as passive, and to make the operation of the receiver independent on the co-operative effect of a number of attuned elements. Just to illustrate what can be done, suppose that only four vibrations were isolated on each transmitter. Let these on one side be respectively a, b, c, and d. Then the following individualized lines would be ab, ac, ad, bc, bd, cd, abc, abd, acd, bcd and abcd. The same principle on the other side will give eleven similar combinations, and both together twenty-two lines, which can be simultaneously operated. To transmit one letter and words is infinite, only forty-six words on each combination are necessary. If the plants were suitable, not ten years, as Watson thinks, but ten hours would be necessary to put this improvement into practice. To do this, Marconi will have to reconstruct the plants, and it will then be observable that the indefatigable Italian has departed from universal engineering custom for the fourth time.

New York, Oct. 24, 1907. NIKOLA TESLA.

A TIME FOR SANITY.

Restoration of Confidence the Imperative Need.

To the Editor of 'The Tribune,'

File: Your columns are always open to whatever seems to concern the public good. Will you let me pay a few words, if you please? In lower New York, this is the time for many people to show their

FOR FOUNTAIN DESIGN.

S. P. C. A. Prize Goes to H. Van Buren Magonigle, Architect.

As the result of a competition designs by H. Van Buren Macgonigle, the architect, for sanitary and pleasant drinking fountains for men, horses and dogs received the prize from the American Society for the Prevention of Cruelty to Animals. Had not been subsequently approved by the Municipal Art Commission. Permission was granted by the commission.

FOUNTAIN ERRECTED YESTERDAY AT
BRYANT PARK.

Fortieth street and Sixth avenue, by the American Society for the Prevention of Cruelty to Animals.

tion to have replicas erected at certain selected suitable points in the city already approved of by the Board of Aldermen.

The society yesterday, at a public meeting, offered one of the fountains at Bryant Park, New York, street, just east of Sixth Ave. On one side of the bronze fountain, facing the street, is the bronze bowl, and on the opposite side are the man and dog bowls.

The society has just erected a fountain of similar design to the Williamsburg plaza. It will be in operation next week. Another one of these fountains will soon be erected by the society at First street, Broadway and Amsterdam avenue. It has been paid for by Mrs. E. J. Post, of the Spanish Armory, and will bear this inscription:

The society will soon place a fountain, destined by John S. Humphreys, at Fifth street and Broadway, the gift of F. August Schermerhorn, and another in Fourth avenue, in the rear of Grace Church, which will do the contribution of a fishmonger.

Foundations declared by the will of the testator will be erected at Counties Slip, the gift of Isaac K. Schuyler; at Rutgers Slip, the gift of an anonymous woman contributor; and at West Point, the gift of F. Augustus Schuyler.

KAISER'S GOLF RECEIVED.

Waste Presented to the United States

[illegible]

SPOT

Dr. W.

1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

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FIG. 1. TESLA.

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Dramatische Fall in der große Hauptstadt, hier befindet sich das Reich Nicola. Die Schwestern auf Ellis Land gegen die Schwestern entgegenstehen, der großen Erfinders gewöhnliche Sterilisationsforium — wie es Bart's Geheimnismaschine. Wir aber sind in Sterilischen, wie sein und dürfen einreden.

Eine weite, hohe vor uns aus, durch eigentümlichen, hell den Schein, der sich zu scheitern auf riesige A deren Glieder sich bei spensterarme hoch bis Die endlosen Experimente freier der Physik, der Chemie, der Physiologie mit allen ihren Nebenfragen verbunden vor unsern Augen durchschauen. Ein scharfer Drogenruch durchfüllt den Raum.

Wir wissen, die gewöhnlichen Maschinen sind zweifellos elektrische Maschinen, die hohen, mit 1000 Volt beladenen Glasgefäße, aus denen die meißtgenen Stangen mit den glänzenden Kugelspitzen ragen, für die elektrischen — in ihrer Mitte an der Spitze raden zu lebendigen, die sich nicht unbegreiflich aber einig andere Worte. Da steht ein ungeheures Gefäß, in das, wie aus verschiedenen Ebenen, mit Draht umwickelt, reich ist. Schräg über dem Gefäß hängt eine große, runde Zinttafel, über der sich eine Vorrichtung zu verbergen, in deren Ausläufer wir einen zirkulären Raum zu sehen glauben. Und plötzlich, wie diese Gegenstände erscheinen uns noch mehrere in den Seiten der Halle aufgestellte große, weißliche Metallballons, deren Silberglanz glänzende Strahlen auf der weißen Wand des Abends das den Raum durchstrahlende magische Licht noch verstärkt. Es ist eine veritable Zauberszene. Wer wäre da nicht neugierig nach dem Wesen und Treiben, dem Wesen und Wesen des Mannes, der hier steht und wie ein moderner Alchimist mit dem goldenen, alchimistischen Schlüssel der Wissenschaft spielt?

Nicola Tesla wurde vor 10 Jahren in Smith, einem kleinen Dorf von etwa 40 Häusern, geboren. Er ist ein ruhiger, feiner, geistvoller Mann, ausstehend den üblichen, ruhigen, mit

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Seiner griechische Jüngling — Phäeton, glaube ich, hieß er — welcher beständig auch Sonnenlicht erzeugen wollte, stürzte bei seinem Veruche die Erde in Brand und wurde dafür von Zeus mit dem Blitz erschlagen. Ein Sonnensohn des 19. Jahrhunderts strahlt keinen Blitz mehr. Er glüht wie die Sonne. Eine Viertel Million Volten! Zur Glorification der Mörder in Sing Sing genügen nicht ganz 2000 Volten.

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Sonne.

Nicola Tesla, Edison's großer Rivale.

Macht Sonnenlicht.

Der Versuch in seinem Laboratorium.

Geleitet durch den Zukunft.

„Nur gleich mir die Sonne.“ (Edison's „Vesper“.)

... Tesla hat indessen noch andere Pläne. Er will ohne Leitung durch die Erde telegraphieren. Vorher muß er nur noch messen, wieviel Schwingungen per Sekunde durch Ableitung der in der Erde enthaltenen Elektrizität entsteht, um hier die gleiche Anzahl Wellen zu erzeugen.

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Terla-Scherff
Correspondence
(Marie Scherff coll.)

MISS : (copies)

1) Tash - Schuff

2) ~~SRM/CWC~~

George Scherff
Tesla Works
111

THE WESTERN UNION TELEGRAPH COMPANY,
INCORPORATED IN AMERICA. CABLE SERVICE TO ALL THE WORLD.

21,000 OFFICES IN AMERICA.

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THIS IS AN UNREPEATED MESSAGE, and is delivered by request of the sender, under the conditions named above.

THOS. T. ECKERT, President and General Manager.

CHECK

RECEIVED

NUMBER

Mr. Dn 21 Paid

RECEIVED

Dated

July 12th 1902

To George Scherff

of Tesla Works M. Ellypey

Please mail her specifications transmission and boat engine men to complete both trunks soon. Tell Docuvenstem to be careful in tests

Tesla

Dear Mr. Schuyler

I am so very
glad to hear
of your success in
the study of the
French language. It is
very important to
be able to speak
French. You are
very young and
it is very important
to be able to speak
French. You are
very young and
it is very important
to be able to speak
French.

Yours

Wm. Schuyler

1774

Mr. George Scherff
Tesla - works

Warden cyffe

L. J.

his present knowledge
to my command will be

The Waldorf-Astoria
New York.

Aug. 9. 1902.

Dear Mr. Scherff,

Mr. Page has just told
me that my opponents
attorney has admitted my
priority. In fact it
appears that Ferrienden
did not do much of
anything beyond conceiving
the idea, and that only
long after I had practiced
it in many ways.

His present knowledge
he may counsel with the
invention in any way. It
is, Dr. Page says - not of
much consequence that he
knew then and therefore
he should only hold fast
on the general facts. He
will have to see Dr. Loomis
this Tuesday morning and
it is possible that we
may find it better that
he see him Monday evening.
Olliver has by preparing
Loomis for this.
I expect to go out either
to-morrow or Monday but it
is very likely that I shall return
on the same day.

Dear
Mr
The
attorn
prior
appear
did
any the
the id
long
it is

Sincerely
N. Teale

Mr. George Scherff
Testa Works

Wardenclyffe
L. J.

The Waldorf-Astoria
New York.

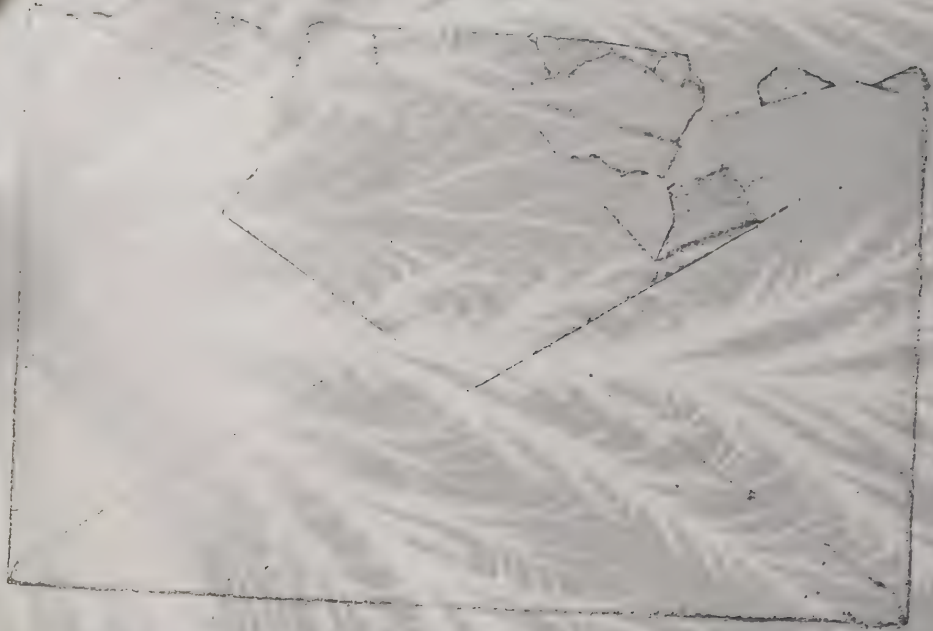
Aug. 9. 1902.

Dear Mr. Scherff,

His present knowledge
he may counsel with the
invention in any way. It
is, Dr. Page says - not of
much consequence that he
know then and therefore
if he should only hold fast
to the general facts. He
will have to be in the town
on Tuesday morning and
it is possible that we
may find it better that
he see him Monday evening.
Oblige me by preparing
a business letter for this.
I expect to go out either
to the town or Monday but it
is very likely that I shall return
on the same day.

Mr. Page has just told
me that my opponents
attorney has admitted my
priority. In fact it
appears that Ferrand
did not do much of
anything beyond conceiving
the idea, and that only
long after I had patented
it in many ways.

Sincerely
L. J. Testa



Now to say that his application to tell you that the
citations are defective and Page wants every possible
that he uses some of articles which Ferrel has
my patented apparatus. publication of any bearing
he must be disappointed however remote on the
of course and I am subject. Please do this
sorry for him although it is possible to know.
you know he has written for not overlook daily
some articles which were papers although they are
not very nice. of smaller importance.
I will print of all Lorenstein's testimony is not
because I know that is essential now but tell
won't please you to tell him to collect in his
that my knowledge as the thought is clear as possible
originator of the principle everything I told him and
correct and also everything I did think with

Sept. 10. 1902.

Dear Mr. Scherff,

Important matters have made it impossible for me to return speedily as I expected and as Lorenzen may not have enough work for all the men I wish you would call his attention to a change I want to make in the hooking down high tension Transformers. The idea is to get all the ends of the high tension windings outside of the tank so as to enable us to make any connection outside. This will be necessary in some experiments.

I propose to this end to do away with the present handles for turning the connections in the oil and also with all the paraphernalia on the top of the bucking plate and make permanent connections through rubber rods or tubes as illustrated in enclosed rough sketch. For connecting we shall use either special heavy insulated wire or something else. This is for the present unimportant. The foreman should make a drawing of this scheme, but the rubber should not project much above the cover of the tank as we ought to get two such pieces out of one rubber bar. I think about $1\frac{1}{2}$ " rubber should be used.

Samuel N. Tarkenton

New York Oct. 7. 1902.

Dear Mr. Schuyt,

Please tell Mr. Townsend

that I have ordered for the

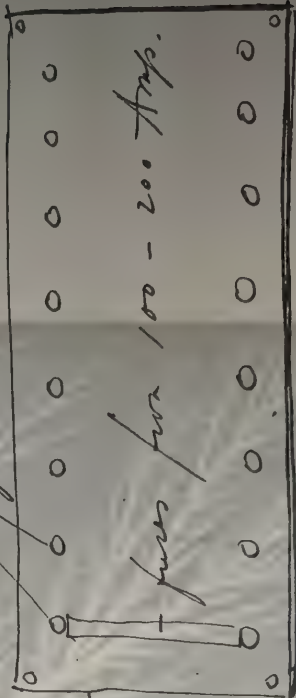
four pieces from auto's for

lower a Marble plate mounted

with 8 D.S.W. pieces as

below:

legs

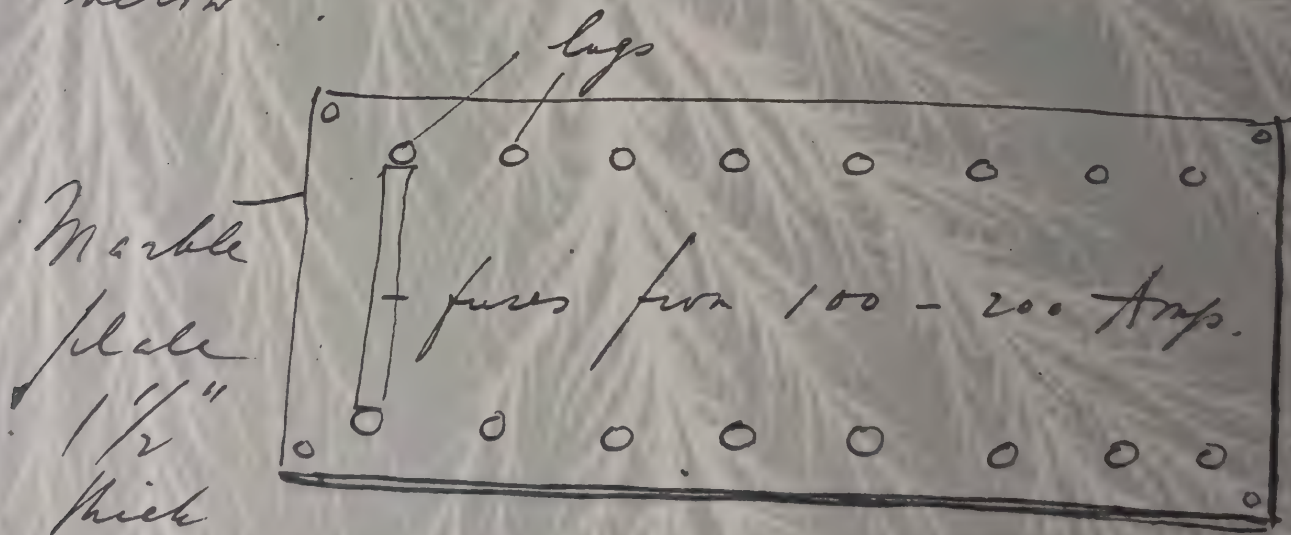


Marble
plate
1 1/2
thick

over

New York Oct. 7, 1902.
Dear Mr. Schuff,

Please tell Mr. Lowenstein
that I have ordered for the
four phases from Auto's Co
lower a Marble plate mounted
with 8 D & W. fuses as
below:



over

This perhaps can be the solid in the
future to the use of technology might be em-
bedded into and I need amount a figure,
think that Government. At any rate he was
happy to see the change in the
a plan of construction which is planning the
houses taken it away to let you see it
make in the laboratory is better to leave the
recommendations of the air - millions when they
exist in the house. For me low
instance the views leading Emergency N York

Nov. 12, 1902

Dear Mr. Schiff,

Thos L says that matters
are progressing to the point where
very little but of course
much to show for it. I
am confident of ultimate
success but see that the
hard work ahead.

Very truly
yours

L. L. L.

1000

July 20, 1912

Dear Sir,

Will you please find me

one of your 10 lb. bags

and one of your 5 lb. bags

of the same material

as the one you sent me

last year. I am sure

you will be glad to

obey my request.

Very truly yours,

W. L. G. B. B.

Enclosed find

check for \$10.00

for the same

material as the

one you sent me

last year. I am

sure you will be

glad to obey my

request.

any material, 16 - 1/4" or even more

12" long.

Perhaps, allowing to this to

increase

W. L. G. B. B.

Question 2.

Answer to

to our little house

W. L. G. B. B.

W. L. G. B. B.

W. L. G. B. B.

W. L. G. B. B.

W. L. G. B. B.

W. L. G. B. B.

W. L. G. B. B.

W. L. G. B. B.

W. L. G. B. B.

W. L. G. B. B.

Monday Nov. 26, 1912.

Dear Mr. [unclear]

I am sorry to find you
have been so busy lately
and hope to hear from you
again soon. I am well and
hope these few lines will
find you the same.

I am sure you are
very busy now, but I
hope to hear from you
again soon. I am well and
hope these few lines will
find you the same.

1912

any thickness $\frac{1}{16}$ - $\frac{1}{8}$ " or even more
immediately

12 blades each 12" long.

Blade of aluminum to show to
show the possible strength

Steel

American
showing to
any case

P.S. I found that
under custom showing
that you are the
money. They will know
you at the Custom House.

March 5, 1903.

MS.

Dear Mr. Scherff,

Prof. Barker of Penn. Univ.
hasing Morgan Scherff of
Physician and me to have
him me of my Lament
Lament graphs taken

all years.

I should like to have one
or two of these Lament Life

(They are provided with an
Aluminium cap on the end
please note this) and

This subject. I refer to my
lecture at the Academy of Sciences.
There is a drawing showing such
an aluminium capped ~~conductor~~.

5). I also send you the ~~new~~
the photograph (drawing) of the
box as a reference. I am
told that the box is the same

[the box is the same as the one in the last issue of the Journal of the Academy of Sciences]

The box is the same as the one in the last issue of the Journal of the Academy of Sciences
The box is the same as the one in the last issue of the Journal of the Academy of Sciences
The box is the same as the one in the last issue of the Journal of the Academy of Sciences

I shall be at Salisbury Monday
Evening at 7 o'clock

as I would like to arrange the papers in my demonstration
of the Band very much) in the laboratory and point out
an interesting & new experiment by the way here below with a
to get these tubes in Group separated tubes (also some copies)
Now I have done this for
I will send you the
preparation of the tubes

3) Date of my lecture before
N.Y. Academy of Sciences (2
times) March 6, 1896. 2) The
subsequent report in a lecture
about a certain day
papers) made a certain day
continued in the subsequent days

Place send of all the tubes
with minimum cup of Reaction 4) My paper in the demonstration
photographs - 16. The tubes
size of them small glass plates
about 4"x4" . I will send you
before to that I have made
before

This subject I refer to by
lecture at the Academy of Sciences.
There is a drawing of a young man
an Alumnus of the University of
Cambridge.

5). I also send you the same
the Phototype (Photograph) of the
bone of a horse. It is a
taken from the Colosseum
in the Colosseum in Rome.
The Phototype is a photograph
taken on the 10th of June 1880.
I have not
other of the kind.
I shall be at the Saturday morning

Evening at the

March 5, 1903.

Dear Mr. Scherff,
Prof. Barker of Penn. Univ.
sends you a photograph of
Physicists who are to be
sent me of my Leonard
Laboratory photographs taken

will send them I should like to see
or two of these which life
(They are provided with an
Alumina in caps on the end
please note this) and

Clark has made two hollow
iron cores of disks. These

ought to be iron-cored with
fiber and rope or bps.

Presumably has made two boxes
for the two self-inductance coils.

There should be mounted on bps

of each a binding post at
the top and the iron cores
should be placed inside.

When the castings come (from pattern
Mr. Penning made before I went away)
Mr. Beers should fix the two supporting
pipes & tie to light heavy weights.

P.S. Station quo and between

April 14. 1903.

Dear Mr. Scherff,

Letter with pictures received.

I understand the Johnson
is straightening the disks. I

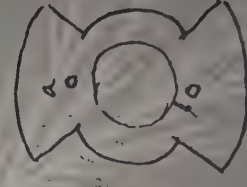
have explained to H. and me

that each pair of disks will

be joined by two studs and

screws diametrically opposite,

like this



detail

disks

screws

a b

studs

and screws

April 14. 1905.

W

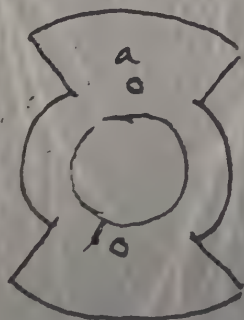
Dear Mr. Scherff,

Letter with pictures received.

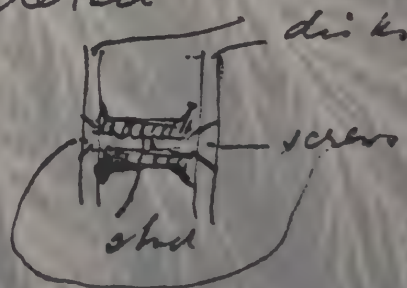
I understand that Johnson
is straightening the disks. I
have explained to Hartman
that each pair of disks will
be joined by two studs and
screws diametrically opposite,

like this

a b
studs
and screws



detail



Clark has made two hollow
iron cores of disks. These
ought to be insulated with
fibre and tape on top.

Mr. Merrell has made two boxes
for the two self-induction coils.

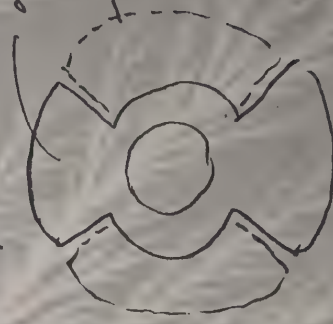
These should be mounted on top
of each of binding posts all
in a row and the iron cores
should be placed inside.

When the castings come (from J. H. Merrell)
Mr. Merrell has made before I went away
Mr. Beers should fix the two supporting
pipes etc. to lift heavy weights.

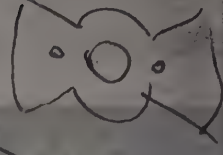
P.S. Status quo and bottom - V. Teste

Please tell them that in
 the new arrangement the
 disks of each pair will
 not be as at present
displaced by 90° but
 will be placed exactly
 alike (not displaced).
 That the four pairs will
 be displaced independently
as before $22\frac{1}{2}^\circ$
 one from the other

are in the same sense
 as regards rotation. R.
 Hartman will understand
 this. To avoid mistake
 I will say that the
 disks of each pair are
 before like this:



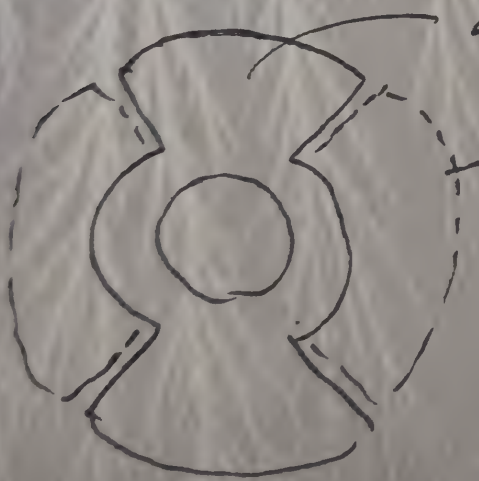
but now they
 will be like
 like disk 1
 looked from side only one
 will be
 visible



Please tell them that in
the new arrangement the
dots of each pair will
not be as at present
displaced by 90° but
will be placed exactly
alike (not displaced).

But the four pairs will
be displaced individually
exactly as before $22\frac{1}{2}^\circ$
one from the other.

and in the same sense
 as regards rotation. Mr.
 Hartman will understand
 this. To avoid mistake
 I will say that the
 disks of each pair have
 before like this:



disk 1

disk 2

but now they

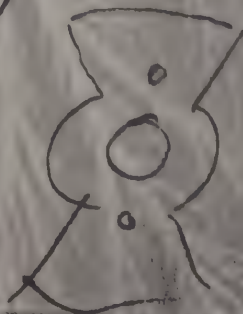
will be both

like disk 1

Looked from side only one

will be

visible



DICKSON D. ALLEY,

FORMERLY OF LUNNELL & Co.

ART PHOTOGRAPHER,

12 EAST 15TH STREET, NEAR 5TH AVENUE,

Paintings, &c., copied by the Isachromatic Process.

New York May 26 1903

Dear Mr. Alley,

Sorry I missed you. I was your too late to snap at my place from the rail-
road track so that the chimney of the building
is just in the center of frame. From a
previous photograph taken by one of my
assistants it would appear that the building
would be obscured by placing the camera
not quite on the level of the center of the
from a track to building but considerably
closer to latter. The camera is, my opinion,
should also be elevated considerably above
ground, but this may not be necessary.
Please when taking this photograph over
see that the doors of the building are
either open and the door of the workroom
is closed and that the two tanks in
front of workroom appear symmetrical with
respect to door. Also observe that all
the windows are down and that the workmen

I have been thinking of you very much lately, and
 wondering how you are getting on. I hope you are
 well and happy. I have been very busy lately, but
 I have managed to find some time to write to you.
 I have been thinking of you very much lately, and
 wondering how you are getting on. I hope you are
 well and happy. I have been very busy lately, but
 I have managed to find some time to write to you.
 I have been thinking of you very much lately, and
 wondering how you are getting on. I hope you are
 well and happy. I have been very busy lately, but
 I have managed to find some time to write to you.

1870

[Faint handwritten notes and markings]

2000

[Faint, illegible handwriting]

Handwritten text, possibly a signature or name, written vertically.

This image shows a blank, aged, cream-colored page, likely an endpaper or flyleaf of a book. The paper has a slightly textured appearance with some minor creases, discoloration, and small dark spots, possibly due to age or handling. The left edge of the page shows the binding of the book, and the overall tone is a warm, off-white or light beige.

100

This image shows a blank, aged, cream-colored page, likely an endpaper or flyleaf of a book. The paper has a slightly textured appearance with some faint smudges and discoloration, characteristic of old paper. The left edge of the page shows the binding of the book, and the overall tone is a warm, off-white or light beige.

This image shows a blank, aged, cream-colored page, likely an endpaper or flyleaf of a book. The paper has a slightly textured appearance with some minor creases and discoloration, characteristic of old paper. There are faint, illegible markings scattered across the surface, possibly due to ink bleed-through from the reverse side or environmental factors. The left edge of the page shows the binding of the book.

Leanne

Handwritten text, likely bleed-through from the reverse side of the page. The text is mostly illegible due to the quality of the scan and the nature of the handwriting.

10 x 12

as to leave a copy of the same to the

author. The following is a list of the names of the

persons who have been taken. In addition I would like to state

that the names of the persons who have been taken are as follows:

1. Mr. John Smith, 2. Mr. James Brown, 3. Mr. William

Johnson, 4. Mr. Robert Taylor, 5. Mr. Charles

White, 6. Mr. Thomas Green, 7. Mr. Henry

Black, 8. Mr. George Grey, 9. Mr. Edward

King, 10. Mr. Richard Lee, 11. Mr. John

MS

July 30. 1903.

Mr. Scherff,

Will you please have Clark
and Hartman to measure for
make a pair of rockers that
we can place in the shop in
addition to the one there.
Two of the same kind should
be placed as I suggested to
Dr. Hartman. He will remember -
one on each side of the door.

This change cannot be made
now either there is not much
to do.

I expect to begin the hanging
here & will be in 1/2 hour in
a corner in a room.

But the conf. is the

completing thought is now. I
have already provided a room also
and the only way to do this
is to suspend.

I know we give to them
additional clothing (sundries) & I
believe it will give them

the way to do it. When I have

the change cannot be made
now either there is not much
to do.

I expect to begin the hanging
here & will be in 1/2 hour in
a corner in a room.

But the conf. is the

completing thought is now. I
have already provided a room also
and the only way to do this
is to suspend.

I know we give to them
additional clothing (sundries) & I
believe it will give them

the way to do it. When I have

This change could be made
now while there is not much
to do.

I expect to begin the making
here of this letter of credit on
a small scale. This is the
first that can be done. I have
carefully thought it over. I
must absolutely provide a revenue
and the only way to do this
is to hangulate. I think
Mr. Brown will give me the
additional backing (contribution)
I talked it over with him and
he will do it. What I think

... to be ...
... only. Please ...
... look ...
... catalogue. He should ...
... of you ...
... with ...
... reader ...
... and ...
... a ...
... of ...
... to ...
... to ...

NEW YORK CABLE ADDRESS, "BOLDT, NEW YORK"
PHILADELPHIA CABLE ADDRESS, "BOLDT, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
HOTEL BELLEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
BULLITT BUILDING RESTAURANT,
PHILADELPHIA.

GEORGE C. BOLDT, PROP.

The Waldorf-Astoria,

Fifth Avenue, 350 and 355 Streets
and Astor City



THE ASTORIA

New York Aug. 17 1903

Dear Mr. Schefft,

Your letter of this morning has
just reached me.

You know, of course, that when
his penic came on, great many estab-
lishments simply dismissed their men.
A dozen manufacturers stopping here
have told me that they did this. These
I think, should understand that I have
tried to treat them generously in the
hardest time this country has known
and they should be grateful instead

of very impatient. I have sent
one of my relatives to Europe for
money and if things go well I
shall get some money by letter
before this week is over. The
question is whether he will be able
to send my uncle to Keshbed. In
the worst possible case he will have to
go down to Borneo which means a
delay of about four days. As
far as immediate action is concerned
I am absolutely depending on my relatives
for also the panic is practically over
yet. The feeling of apprehension is
still acute. A number of things,
however, are developing here and
may at any moment lead to a solution
of the problem which confronts me.
I can assure you over and over that nothing
can prevent my ultimate success. Please use
your excellent intelligence best you can in
the interest of the cause. Sincerely
W. F. Felt

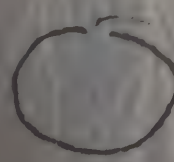
The Waldorf-Astoria
New York.

Nov. 16. 1903.

Dear Mr. Scherff,

I forward this afternoon
small oscillator to be repaired
as follows:

The fibretube on which the spool
is wound should be replaced
by thin german-silver sheet or,
if no german-silver is on hand, by
brass sheet (tube) wall say $\frac{1}{32}$ ". Of
course the sheet bent or tube should
not be closed but open like this

 This opening $\frac{1}{16}$ " should be
turned toward the primary
copper coil on back. The

Make sure plate covering binding -
starts in from on the
plate. It is not necessary.

The rubber column should be
about $1\frac{1}{2}$ " high. The

See

same column may be made by
putting on a piece of rubber
bottom, by some way has
been found to be better.
The two brass plates.

Small

The

is not

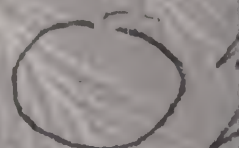
by

if not

green

course

not be



Copper

Repeat entire back mechanism
new plate is made of rubber.
The wires from secondary coil should
be thicker and well insulated. The
cable should be necessary to drill one
the rubber column. Copper or steel
wire one. Examination and danger and
make up new one for 50 m.

Examination and danger and
make up new one for 50 m.

carefully (inner metal like structure)

with
muscle paper
look out in the
corners!

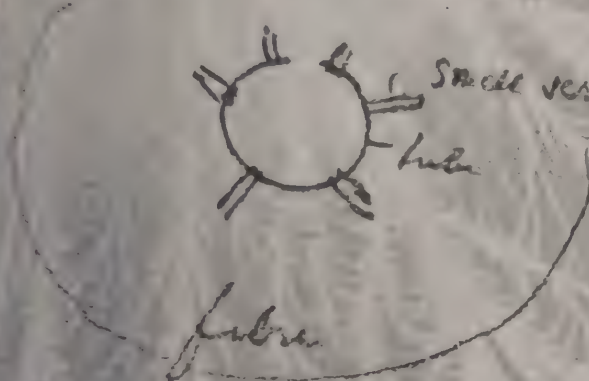
Of course iron core inside
should be made so much
longer as the coil is higher
through than lengthening of the
tube carrying the fibres.

I believe the top fibre should
be changed. I saw following
the transverse on top should
be larger than gate loose

Note: Iron core inside should
be kept away from metal in
surrounding it by small fibre

of iron
O - fibre paper

metal shell or shelled tube will
 be fastened to the two fibre ends
 from the inside. This

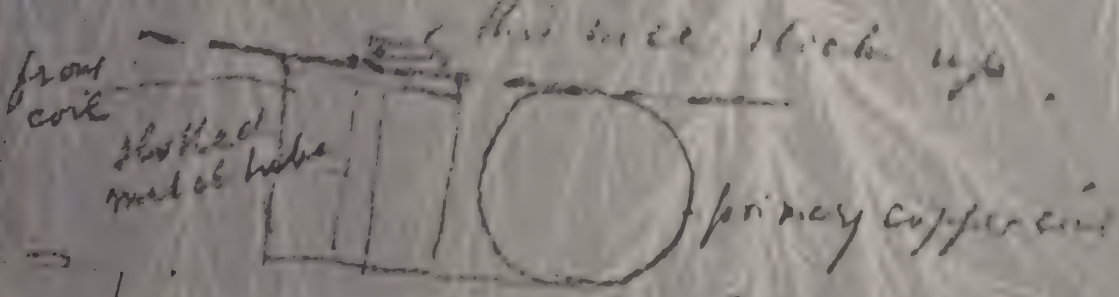


Small screws not sticking
 out inside.
 Shell may be
 isolated.

Of course
 should
 longer
 through
 tube can

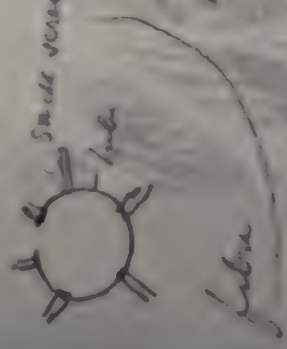
Now the metal tube should be
 made longer than the fibre tube
 to be replaced about $\frac{1}{2}$ " so
 that the top of the front coil will
 be on a level with the
 top of the primary copper coil
 like this

I believe
 be deep
 the top of
 be larger



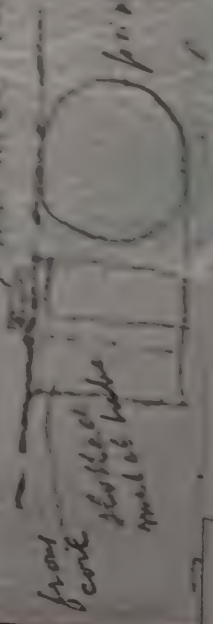
Notes: To
 be kept a
 surrounding
 for

metal shell or shelled like with
 be perforated by thin fibre
 from the inside with the thin



same reason not shelling
 out inside
 shell may be
 increased

Now the metal shell should be
 made thinner than the fibre
 to be replaced about 1/2" or
 thus the top of the front coil will
 last be or a little with the
 top of the primary copper coil
 like this



the will stick up.

primary copper coil

with
 present fibre
 look at the
 corners!

the corner iron core inside
 should be made to meet
 together so the coil is higher
 through the lengthening of the
 tube carrying the fibres.

I believe the top fibre should
 be changed. Since forming
 the transformer on top should
 be larger there for more

note: Iron core inside should
 be kept away from metal shell
 surrounding it by some fibre

Q - for fibre

Reck and plate covers, binding.
parts of frame including the
plates. It is not necessary.

The rubber column should be

about $1\frac{1}{2}$ " high. The

same column may be used by

padding on top with rubber

bottom, long side by the

side to bottom, and bottom

to the top, padding.

Repair entire brass mechanism by this process or steel or,

new plating on process if necessary. If no former silver in or lead, by

The wires for secondary coil should be cross steel (plate) wall say $\frac{1}{32}$ " of

the thickness of the wire. The

old metal necessary to drive one

the rubber column longer or hole

last one. Examination indicates an

The Wallport-Astoria
New York.

Nov 16, 1903.

Dear Mr. Scherff,

I forward this afternoon

small oscillator to be replaced

as follows:

The petriplate on which the spool

is wound should be replaced

by this given cross steel or,

if no former silver in or lead, by

cross steel (plate) wall say $\frac{1}{32}$ " of

the steel but as hole should

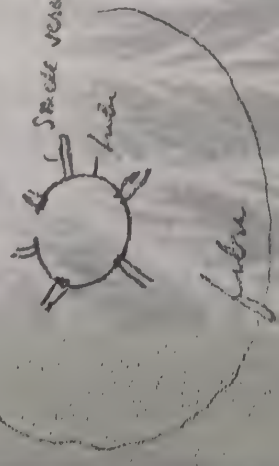
not be closed but open like this

the opening $\frac{1}{16}$ " should be

turned towards the primary

copper coil on back. The

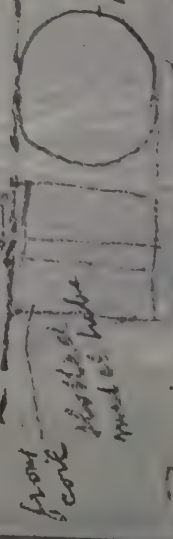
which shell or should take into
be furnished by the two fibre-chains
from the same side. ~~the~~ ^{the}



Saddle seems not showing
but inside
that they be
retracted

Now the metal wire should be
made ~~longer~~ than the fibre-chains
to be replaced about $\frac{1}{2}$ " so
that the top of the front coil will
stand in or a level with the
top of the primary copper coil
like this

This will stick up.



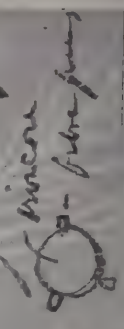
primary copper coil

insulating (wires metal like wire) ^{insulate paper}
Epoxy as in the
corners!

Of course iron core inside
should be made so much
larger as the coil is higher
through the lengthening of the
wire carrying the fibres.

I believe that top fibre should
be changed. Since following
the transformer on top should
be larger than the front coil

Note: Iron core inside should
be kept away from metal base
surrounding it by small fibre.



are having me as
long but in middle

The Waldorf Astoria
New York.

Apr. 18. 1903.

Dear Mr. Schuff,

perfectly in danger
the blind people are

They are poor, and
the people who are

it is the same thing
to be to be to be

I repeat
to be to be to be

Sincerely

P.S.

I am writing in pencil following no paper between letters
fear of my friend Crook's who has been in the city.

I sent message by
telephone today to
and charging will
be one wire
Please tell Alfred to
be very carefully

and very carefully
the people who are
the people who are

Waldorf Astoria
New York
116
116

The Waldorf-Astoria
New York.

Nov. 18. 1903.

Mr. Schuff,

I sent message by
telephone to-day to
have charging coil with
one size thicker.

Please tell Alfred to
work very carefully so
many lines as possible

no paper between layers
also that it takes in energy.

turned 116 should be
charging coil on back. The

25. 11. 03

are having me as
the long but, make

You are right it is
harder than I thought
to find people who
are the same, even
in the same place.
I expect to look them
up to some day.

P.S. Sunday
I am writing in pencil following
some of my friend Crocker who helps me to

people on the lake
before [unclear] the
[unclear]

in [unclear] as [unclear] right.

The [unclear] [unclear]
he [unclear] [unclear] as [unclear]
as [unclear] [unclear]

is [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear]
[unclear] [unclear] [unclear]

[unclear] [unclear] [unclear]
[unclear] [unclear] [unclear]
[unclear] [unclear] [unclear]

[unclear] [unclear] [unclear]
[unclear] [unclear] [unclear]
[unclear] [unclear] [unclear]

make the [unclear]
of [unclear] on the [unclear]

a [unclear] [unclear]
to provide a few [unclear]
[unclear] which [unclear]

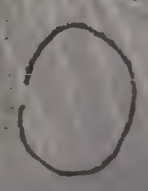
them off of [unclear]
There are some of the
[unclear] [unclear] [unclear]

day. [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear]
[unclear] [unclear] [unclear]

[unclear] [unclear] [unclear]
[unclear] [unclear] [unclear]
[unclear] [unclear] [unclear]

make the amount
of iron on the hammer
a duplicate that is
to provide a few thin
wedges which may be
taken off as desired.
There are some of the
conditions made the
day. I believe the
will show things the
shall within will
work perfectly.
I suppose that y-

the opening $\frac{1}{16}$ " should be
turned towards the primer
copper and on back.



people on the legs
before 1800. The
Anderson is all right.
The minutes should
be put together as soon
as possible. Change
in all particulars
as suggested in
former meeting.

If we do change
the platform committee shall
recommend
I would be glad to
I am

are being made
has long been made

The Waldorf-Astoria
New York.

You are right it is

perfectly correct
has been people are

Today the people are

the people are

get it do something

I expect to look them

up to now.

Sincerely

Wm. T. Scherff

I am writing in pencil following

theory of my friend Gustav who tells me it is better to be

than to be

Apr. 18. 1903.

Mr. Scherff,

I sent message by

telegraph today to

and charging wire will

are one wire

Please tell Alfred to

and very carefully to

and very carefully to

and very carefully to

and very carefully to

and very carefully to

except on the top
before 1880. The

in den is at night.

The mountain shown
be put together as some
as shown the change

in the present state of
as supposed in the
formation of the

It was not changed
the platinum contacts were

renewed
It would have been

with the amount
of iron in the burner

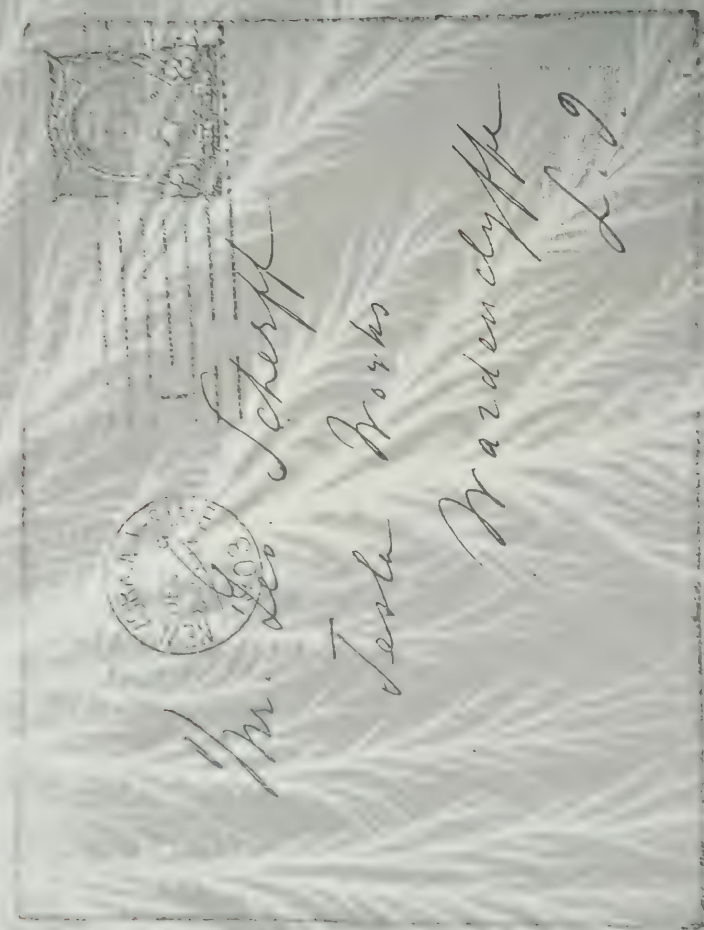
adjustment that is
to provide a few thin
wires which may be
taken off at leisure.

There are some of the
oxidation made the

top. I believe the
will show changes in
the chain will

work satisfactorily.
I suppose that you

Shine in
burnt down the furnace
could be made



Mr. Geo. Scherff

Testa Works

Wardencliff

L.I.

...and made the se-
...it is very diffi-
...The Waldorf-Astoria...

...the
...the
...the

I have been very much interested in the
 will be made the re-
 The Waldorf-Astoria
 New York.
 Dec. 9. 1903.

I have come to an
 understanding in regard to
 the work of my ma-
 nagers with the
 various committees

It
 is a large and important
 from the Committee, I have
 before

I have been very much interested in the
 will be made the re-
 The Waldorf-Astoria
 New York.
 Dec. 9. 1903.

I have come to an
 understanding in regard to
 the work of my ma-
 nagers with the
 various committees

It
 is a large and important
 from the Committee, I have
 before

The Waldorf-Astoria
New York.

Dec. 9, 1903.

Mr. Schaff,

I have come to an

understanding in regard to

manufacture of my ma-

chine with that my

De Longo Committee

is a very excellent party. It

is a large manufacturing

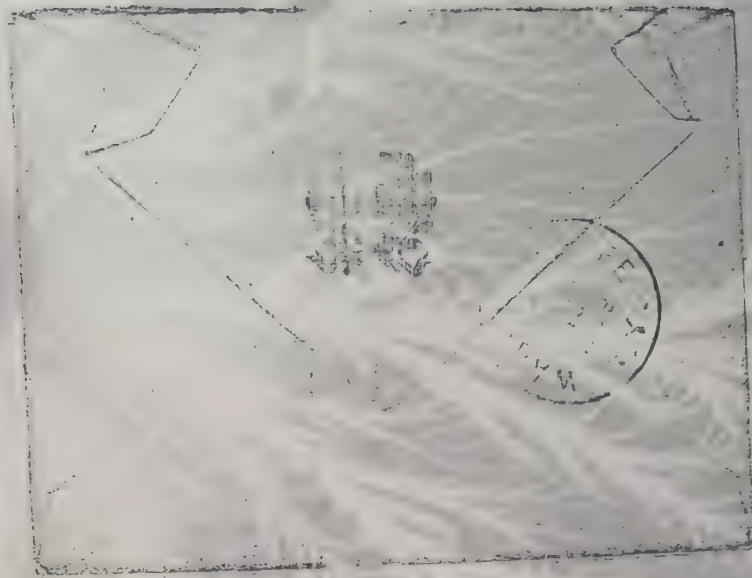
firm in Chicago, I have

known of him before

the primary
card on back.

that by any connection
will be made up to the
order. I don't see
how it can be done.

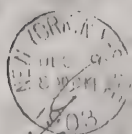
You can see H. Brown
has the primary form
attached and he has
informed me. The design
is perfectly original. I
am I am not
to ask a fee. I
am thinking of a person. I
would suggest that we see very
much in some way. I do not
think the others will have
that. If I could have known from
them they would feel that my card



as of a mass of great energy. The ~~parts~~ ^{parts} are all the metal parts and I propose to ~~use~~ ^{use} the plan down there has done all the electrical work. As you see it this way a small capital - ~~will reach~~ ^{will reach} ~~the~~ ^{the} far. She is ready to take up the matter at once. As soon as I can manage I shall even go to his factory where we shall discuss some details. I am very pleased with

as if a man of great
energy, who is by no means
all the better parts are
I propose to see the plan
down there you have all
the electrical work. It
you see in this way -
Small capital - with a
far. He is ready to
take up the matter as a
whole. As soon as I
can manage I shall go
to his factory where he
shall discuss some details. I
am very pleased to be

Mr. Leo Scherff
 Tesla Works
 Wardencliff
 L.I.



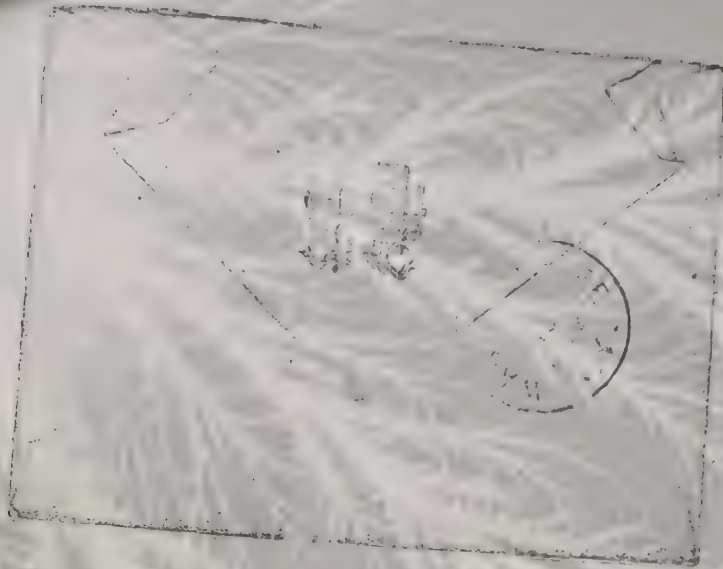
The Waldorf-Astoria
 New York.

Dec. 9, 1903.

Mr. Scherff,

I have come to an understanding in regard to the manufacture of my machines with that organization. Consider a very excellent party. It is a large manufacturing concern from New York City. I have met him before.

But on any connection with Wardencliff is disapproved. I did not see you at the time. You can see Mr. Brown (the inventor) and he is very helpful. The money is in perfectly good shape. I am very anxious to see the machine and to see the patenting is done. I can well expect that we shall have some success. I do not think the others will have the best. If I had been known to them they would feel that my machine was better.



as of a mass of green
 energy. Now we make
 all the metal parts and
 I propose to use the plan
 down there for all
 the electrical work. As
 you see it this way a
 small capital - ~~with~~ ~~which~~ ~~it~~ ~~has~~ ~~been~~ ~~given~~ ~~to~~ ~~us~~
 far. He is really ~~very~~ ~~much~~ ~~interested~~ ~~in~~ ~~the~~
 take up the matter with a ~~view~~ ~~to~~ ~~fix~~
 once. As soon as I
 can manage I shall go
 to his factory where we
 shall discuss some details.
 I am very ~~pleased~~ ~~to~~ ~~talk~~

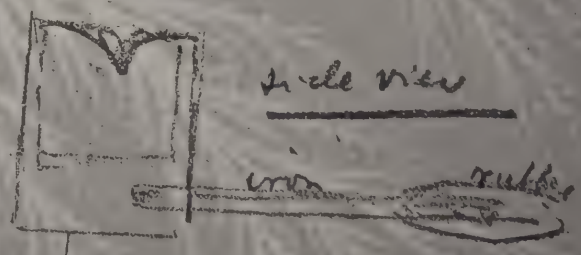
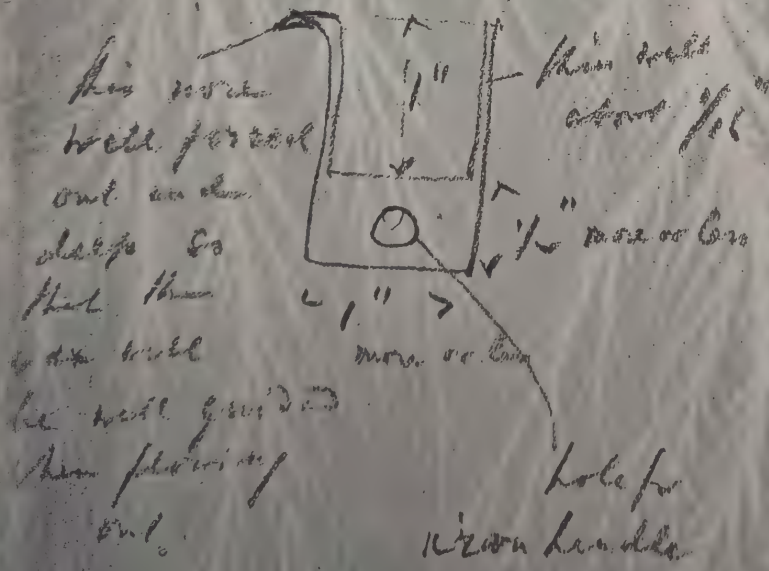
This result is disappointing
 but these things are not
 moving fast. These
 are certainly dreadful
 times. One conclusion
 is that the Edison
 - ~~the~~ ~~company~~ ~~is~~ ~~not~~ ~~contributing~~
 The name of that plan
 should be changed to all
 the same as I have dis-
 covered that I have been
 suffer for M. Ward's
 misdeeds. Everything

24. 1904.

Dear Mr. Schuff,

Please have Dr. Schuff send me

2 small pieces of copper with handles as a sketch. The dimensions are only approximate. It makes no difference if they are more or less. The blocks should have deep grooves to keep them long. They can be used for proving soldering iron when soldering the buttons.



Copper block

2 of these

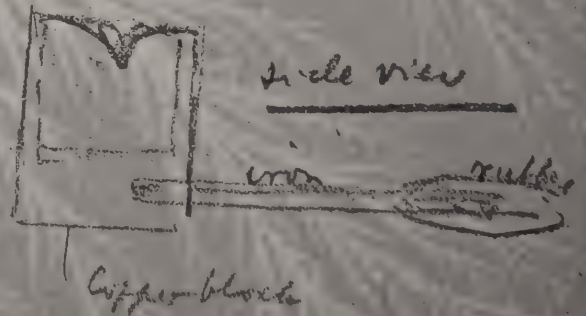
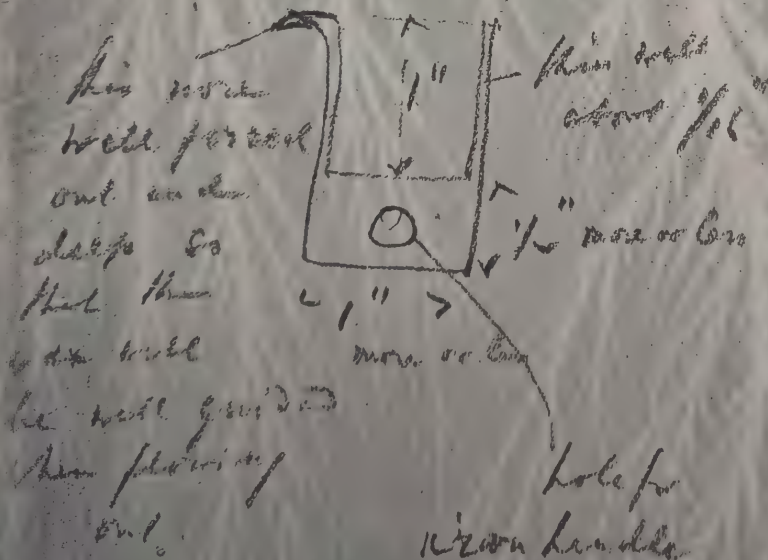
over

24. 1904.

Dear Mr. Schuff,

Please have Dr. Schuff send me

2 small pieces of copper with handles as a sketch. The dimensions are only approximate. It makes no difference if they are more or less. The blocks should have deep grooves to keep them long. They can be used for proving soldering iron when soldering the buttons.



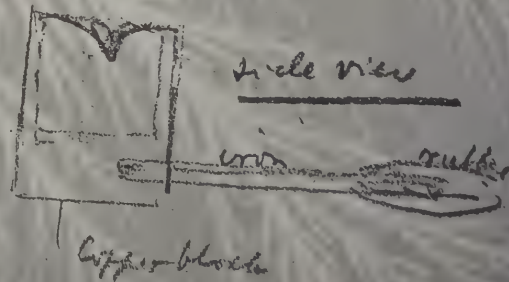
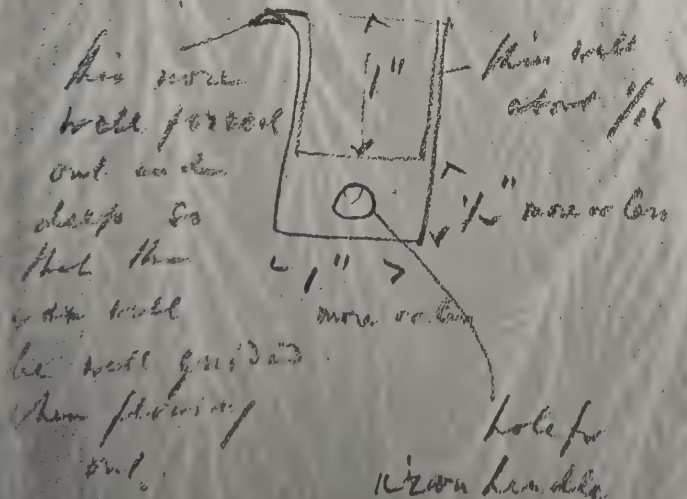
2 of these

over

24. 1904.

Dear Mr. Scherff,

Please have Dr. Johnson make
2 small pieces of copper with
handles as a sketch. The dimensions
are only approximate. 11 inches, more
difference if they are more or less.
The blocks should be heavy bottom to
keep handle long. They are to be
used for pressing sealing wax when
sealing the bottles.



2 of these

over

Perhaps A & I should have
found them to be Monday evening
away from the I put them
Tuesday

I hope you are enjoying the
shops in the city just as
much as I am. I am enjoying every thing

Yours

Love

A. T. T. T.

P.S.

My letters can be sent out
on Friday forenoon

Perhaps A. & I should have
found them to be Monday evening
away to the I. J. the
Tuesday

I hope you are enjoying the
phys. on the ground
and that you are enjoying everything

Yours

Wm

W. T. C.

P.S.

My letter can be sent out
on Friday forenoon

The Waldorf-Astoria
Fifth Avenue 33 and 34th Street
and Astor Court.
New York.

Mr. Leo

Teale Works

Wardenship

4

✓

✓

✓

✓

✓

✓

as far as we can
begeth money to you
Have this after that
I can show you the
U.S. Treasury report
I have a copy of the
report.

Trued & put
you on phone the
Monday in vein.
Sincerely
V. Teal

New York City
June 1, 1904

My dear Mr. Scherff,

This freight is only
with vapors. I believe the
R.D. is
not a band of anti-
throids. That there is
no way out of it except

to put
place let Johnson

New York City
June 11, 1904

My dear Mr. Scherff,

This freight is out-
raged. I believe the
N. Y. R.R. is making
but a band of out-
throats. There is
no report of it except
to pay.

Yours as always
John Lawrence

as proposed will be a
perfect success and you
know that after that
I can draw on the
U. S. Treasury.

I think, however, with regard
to the proposed
loan, it is not
advisable to proceed.

Trued to see
you on the 11th
Whednesday evening. V. Teale

My

The

Page

1

not

brood

no

to

place

complete this job as I at first Robinson
from as possible. Also to cut down the grass
See that all the other vegetation within fence.
Native gardening to the It will look much better.
have spent out as in I promise a excellent
order. I shall be kept with a
at. When I come on the other evening. I was
read that I hope will really be successful. He has
to the day after to - it ought to improve well
now. For tomorrow but the success is not
I have a number of guide as expected. I am
to 5 ants, to overtake. has now lost the lamp

to find the old to -
yourself seem to you
know the after the
I can afford to be
W.S. F. H. H. H.
I am very much
to the
to the

Sincerely

Tride to get the N. Tench
you or please the
When day in vein.

New York City
June 1, 1904

My dear Mr. Schenck,

This freight is out -
will vapors. I believe the
J. B. R. is a
not a band of out -
Hood. That there is
no way out of it except
to pay. But Lawrence

MS

Aug. 7. 1904.

Dear Mr. Scherff,

I had a dreadful
experience in the college
last bed day and have
not been the same since. P. A. M.

Mrs. Scherff would very
much oblige me if
she would kindly send
me some coffee
and perhaps two eggs.

Very sorry to trouble you
Sincerely
A. T. Scherff

Aug. 7. 1904.

MS

Dear Mr. Scherff,

I had a dreadful
experience in the college
last week day and had
to go to the hospital.

Mrs. Scherff wrote and
much obliged me if
she would kindly send
me some coffee
and perhaps two eggs.

Very sorry to trouble you
Sincerely
J. T. Scherff

The Waldorf-Astoria
New York.

Jan. 23. 1905.

My dear Mr. Scherff,

Your letter, born

insufficiently to permit

any wise decision person

to reach the terrible

man reveal of

his intolerable - need

to be taken

get the things off the W. Ch.
to-day. When the W. Ch. matter was
done I would have you in the afternoon. The
names are hope the the abstracts a my
parts will be over my are a regular
the 4 P.M. train. Hydra. Just as soon
I am working here, as I change off a
on the new bridge load for new ones
receiving the support. Hy after
of laying a solution of an apoc-
foundation. before results
I built further. I am sure of it. I have
P.S. Please let me know as I did. I have
I have

The Waldorf-Astoria
New York.

Jan. 23. 1905.

My dear Mr. Schuyt,

Your letter from
sufficiently to show
and to show a person
to show the terrible
open secret of
the situation - need
to be taken

get the things of
to-day. I think the
the gentlemen you
name are hope the
good will be over
the 4 P.M. back.

I am working hard
on the new organ
receiving the report
of laying a solid
foundation before
I build further.

P.S. Please let me

The
 you
 the
 one
 in.
 her
 again
 word.
 And
 —
 clear

Arrived at W. Ch.
 N. & Co. Miller way 190
 Dispersed. All
 the obstacles in my
 way are a regular
 Hydra. Just as soon
 as I chop off a
 head two new ones
 grow. By afternoon
 tomorrow I am expect-
 ing some results.
 Sincerely
 Let me know if it fails
 before arriving

people to whom
I am referring.

The work is progressing fairly.
Carpenter will be ready this week
probably the same week
see as further along. I am
doubtful I can do your
business. It is going
to be a fine machine. I think
it will be the most valuable
that all difficulties shall
be present themselves
Sincerely at Teik

P.S. There is a possibility that I may
and you have for a day or two. Will
write a day before is necessary.

New York City

March 20, 1900.

Dear Mr. Schmitt,

I have just received
your letter referring to
the contract of a
at Lindendyffe.
It does not seem
to me he is the
declared responsible for the
damage. As you know I

NEW YORK CABLE ADDRESS
PHILADELPHIA CABLE ADDRESS

offered to the Dr. J. R. R. of my law has done
to let this out if they it is in ways of crimes -
some of the me - not neglect.) an other
to the line for payment. gether to unforth will as
In war of their early law to many battles to
promises) was doubt - conduct is the the)
founded to learn that they can make to suggest
are my - anything. It would be
d as well as that. Just under lowest to make.
as soon as they refused any suggestion. Law of
they might to have shipped my - would tell me how
the car every to avoid this conduct it would be
injury to other people. to draw for me. the other
I have seen the other

New York City

March 20, 1901.

Dear Mr. Scherff,

I have just received
your letter referring to
the contract of
at Dordrecht.

It does not seem fair
to make me or the Coal-
dealers responsible for the
damage. As you know I

people to-morrow if
I am ready.

The work is progressing fairly.
Curtains will be ready. This week
~~and~~ probably the next will
see us further along. I am
doing all I can as you may
imagine. It is going
to be a fine machine. There
do you but in the meanwhile be
sure all difficulties shall
not prevent themselves.

Sincerely et Telle

P.S. There is a possibility that I may
not go here for a day or two. Will
write a day before if necessary.

offered to the L. I. R.R.
to take this coal if they
would only give me a
little time for payment.
In view of their early
promises I was dumb-
founded to learn that they
were saying
that as well as that. Just
as soon as they refused
they ought to have shipped
the car away to avoid
injury to other people.

123456789

26

I have not done
it, is a singular "crisis"
not neglect. I am alto-
gether too unfortunate and
have so many troubles to
contend with that I
am unable to suggest
anything. It would be
wiser however to make
my suggestion. Even if
My word tell me how
this would be word be
be dear for me.
I shall see the other

NEW YORK CABLE ADDRESS: "THE WALDORF," NEW YORK.
 PHILADELPHIA CABLE ADDRESS: "THE WALDORF," PHILADELPHIA.



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
 HOTEL BELLEVUE, PHILADELPHIA.
 THE STRATFORD, PHILADELPHIA.
 BULLITT BUILDING RESTAURANT, PHILADELPHIA.

GEO. C. BOLOT, PROP.

The Waldorf-Astoria,

Fifth Avenue, 33rd and 34th Streets
 and Motor Court,



THE ASTORIA

New York March 22 1904

Dear Mr. Scherff,

I have just received a letter from
 Clark which has given me the best
 of satisfaction. I hope, then,
 I shall have some very good news
 to report. He must be in an
 awful fix, but if he has been
 made for the time being he would
 not be worth anything. Please
 let me hear from him - I have
 and tell him that I am in

My affection, and very long.
I am alone to see you but it is
like lifting a weight. Praying once
more.

The work on the new machine
is progressing well. It seems the
separation paper are not yet fixed
away for a time. Love. The
envelope

I am always a lover to see
you and if some possible
develops and

Please write soon. I do not

Ever

John

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "BOLDT, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
HOTEL BELLEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
BOLLY BUILDING RESTAURANT, PHILADELPHIA.

GEO. C. BOLDT, PROP.

The Waldorf-Astoria,

Fifth Avenue, 330 and 34th Streets
and Astor Court,



THE ASTORIA

New York March 24 1905

Dear Mr. Schuyler,

Your letter with a French translation
I have not time at the moment to answer
the article is in the right. The
fact is not your fault.

The comment in the El. paper is very good but
I have a better one in German. Evidently
a change for the better is taking place. The
question now is only to get over the lan-
guage difficulties.

Have followed your suggestion and have ordered
a cartoon from Penn. Bros. but of course
I did not see any of asking them to
pay freight. I have requested Ambrose
but he has not any other good work than
ship it and send it.

NEW YORK CABLE ADDRESS: "WALDORF," NEW YORK.
PHILADELPHIA CABLE ADDRESS: "BOLLY," PHILADELPHIA.



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
HOTEL BELLEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
BULLITT BUILDING RESTAURANT,
PHILADELPHIA.

GEO. C. BOLDY, PROP.

The Waldorf-Astoria.

Fifth Avenue, 330 and 34th Streets
and Motor Court.



THE ASTORIA

New York March 28 1905

Dear Mr. Scherff,
First of all - Saxe's Thunder struck the
building early this morning. It came
out of a clear sky. Technically, of
course, you know Saxe is wrong. He
ought to have his lieutenants and then
these should see me for creeds. But
it is good that he has on this
occasion unfurled his true colors.
I intend to tell him that if my people
stand around his horses the property
will be worth less for no one else
could be found. This looks like a
good agreement or rather club.

Of all objections I would like best
to get this one out of the way and
I am thinking of securing some sort
of proposition. Should you get some
good ideas please write me.

Although I have met with some draw-
backs - but certainly having been found bed -
I expect the machine to be ready
and in operation next week. Clerk should
visit the Engineer as understood last
of Sunday. He can bring his steam and
then a 2 1/2 horsepower connection above the flow,
and put the put the plates in place.
I will arrange all in the machine room
and get it up as quickly as possible. Have
all the men you can get at this. Power
might be used to improve things outside.
You will get the coal very soon. I had a
connection with the people over the phone.
Your letter was ok, except the understanding
but - der Zweck heiligt des Mittel! "
Some particulars for printing will follow later - will
reach you probably with some mail.
Do not forget translation of Pet. Specifics. Sincerely A. T. C.

NEW YORK CABLE ADDRESS "WALDORF NEW YORK"
PHILADELPHIA CABLE ADDRESS, BOLDT, PHILADELPHIA



The Waldorf-Astoria,

Fifth Avenue, 330 and 34th Streets
and Astor Court,



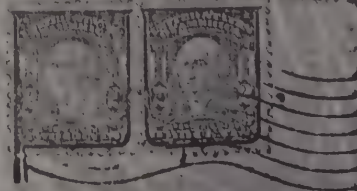
THE WALDORF
THE WALDORF-ASTORIA, NEW YORK
HOTEL BELLEVUE, PHILADELPHIA
THE STRATFORD, PHILADELPHIA
BULLITT BUILDING RESTAURANT, PHILADELPHIA
CEO. C. BOLDT, PROP.

New York March 29 1905

Dear Mr. Scherff

Inclosed ought to be perfectly
sufficient for the job up
to the bridge for connection. All
pipes should have these valves and union
joints in line. It is also shown that
wheel of the steam pipe is turned
downwards and that the compressed air
pipe is upturned for a distance of ten feet.
Please have these alterations made
as soon as possible. I am sure that
this is all that is necessary.

NEW YORK
MAR 29
2-30P
1905
N.Y.



Mr. George Scherff

Wardencastle

The first thing I have seen is very
 interesting. I have seen many things in
 my life, but I have never seen anything like
 this. I have seen many things in my life,
 but I have never seen anything like this.
 I have seen many things in my life, but I
 have never seen anything like this. I have
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 like this. I have seen many things in my
 life, but I have never seen anything like
 this. I have seen many things in my life,
 but I have never seen anything like this.

I am writing to you
 as the day is
 passing away
 and the sun is
 setting.

Please let me know any time

50

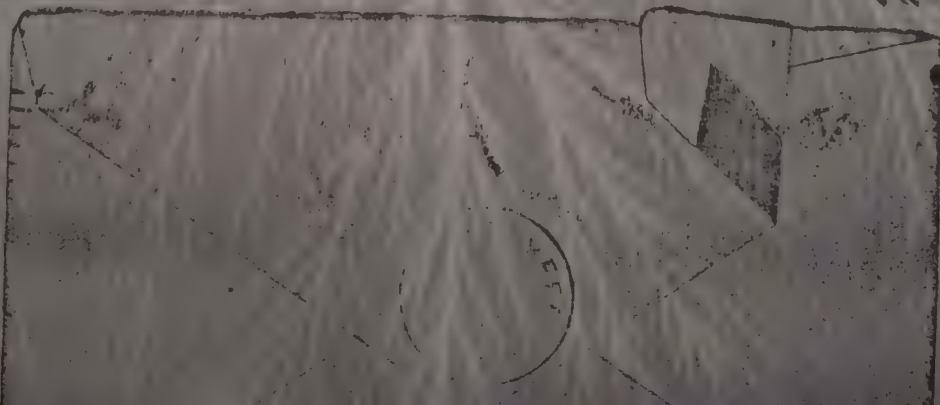
At 6 o'clock we arrived

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East of the mountain.

Ther. will be
desired or
needed.
I think we
need now



NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS, BOLDT, PHILADELPHIA



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
HOTEL BELLEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
BULLITT BUILDING RESTAURANT, PHILADELPHIA.

CEO. G. BOLDT, PROP.

The Waldorf-Astoria,

Fifth Avenue, 330 and 34th Streets
and Motor Court.



THE ASTORIA

New York March 29 1905

Dear Mr. Schuyler

I enclose right to the perfectly
suggested from the to put up
filing ready for connection. All
pages should have their values and amount
written in blue ink at this place. The
wheel of the steering gear ^{5 (2nd wheel)} ~~is~~ ^{valve} is turned
downwards and the compressed air
pipe is ~~upward~~ for ~~the~~ ^{the} ~~purpose~~ of landing.
Please see that ~~the~~ ^{the} ~~valve~~ ^{valve} ~~is~~ ^{is} ~~turned~~ ^{turned}
downwards so that I may find it
being in order as soon as possible.

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS, "GILDT, PHILADELPHIA"



The Waldorf Astoria
Fifth Avenue, 33rd and 40th Streets
and Astor



THE WALDORF
THE WALDORF-ASTORIA, NEW YORK.
HOTEL BELLEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
BULLITT BUILDING RESTAURANT, PHILADELPHIA.
GEO. C. BOLDT, PROP.

New York March 29 1905

Dear Mr. Schuff,

I just arrived in New York from London 11:30 P.M. I am glad to hear from you and hope you are well. I had a little change of my light schedule. I am now in the city of New York and am very much interested in the work of the National Association of the Deaf. I am sure that you will be very helpful in this regard. I am sure that you will be very helpful in this regard. I am sure that you will be very helpful in this regard.

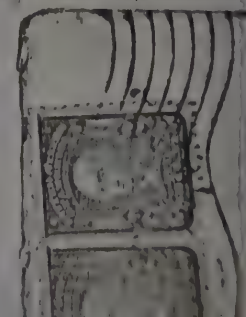
The machine is placed on glass block.
The sheet just the right crowd. The
papers about gray will be a brown
already fixed, in all cases.

Sincerely,
J. T. ...

THE ASTORIA
March 29 1901

March 29 1901 ✓

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down: all
D. minor
the
(shades) turned
compressed air
use of banding
and what
and what
propose



The Waldorf
Fifth Avenue, 17th St
and Astor

THE WALDORF
HOTEL BELLEVUE, PHILADELPHIA
THE STRATFORD, PHILADELPHIA
BULLITT BUILDING RESTAURANT
PHILADELPHIA
GEO. C. BULLITT PROP.

THE ASTORIA

New York March 29 1901

Dear Mr. Schmitt,

I feel sure that you are
interested in the
Hotel Bellevue in Philadelphia
and I am sure that you
will be interested in the
Hotel Stratford in Philadelphia
and I am sure that you
will be interested in the
Bullitt Building Restaurant
in Philadelphia. I am sure
that you will be interested
in the Hotel Bellevue in
Philadelphia and I am sure
that you will be interested
in the Hotel Stratford in
Philadelphia and I am sure
that you will be interested
in the Bullitt Building Restaurant
in Philadelphia.

[The page contains faint, illegible handwriting throughout.]

[illegible]

NEW YORK CABLE ADDRESS:
PHILADELPHIA CABLE ADDRESS:



The Waldorf-Astoria,

Fifth Avenue, 33rd and 40th Streets
and Astor Court



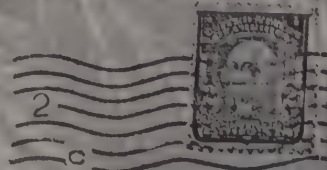
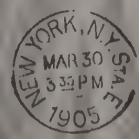
THE WALDORF
THE WALDORF-ASTORIA, NEW YORK
HOTEL BELLEVUE, PHILADELPHIA
THE STRATFORD, PHILADELPHIA
BULLITT BUILDING RESTAURANT,
CHICAGO
GEO. C. BULDT, PROP.

New York March 30, 1905

Dear Dr. Scherff,

I have been thinking of Dr. M. T. Co.
at this time. I am sure that I
am acquainted by name and one billion
times.

Please bring the paper for re-
prints of documents by yourself. The
rest of this matter will be done well
along. Last night I was in the common
room. All were in O. K. as far as the
operation in connection I feel sure.
This morning will not be long
the work of translation.
I would like to go to the New York



Mr. George Scherff
Wardenslyffe

The first of these is the
 fact that the
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12

Sept 18 1864

[Faint handwritten text, likely bleed-through from the reverse side of the page.]

1. *Staphylinus*

172

I have been thinking of you
 and your family very much
 and hope you are all well
 and happy. I am well
 and hope to hear from you
 soon. I am your affectionate
 friend,
 J. W.

This image shows a blank, aged, cream-colored page, likely an endpaper or flyleaf of a book. The paper has a slightly textured appearance with some minor creases and discoloration, characteristic of old paper. A small, dark, circular mark is visible near the bottom center of the page. The page is set against a dark background.



Dear Dr. Schaffner
Received from the State of Dr. N. T. Co.
this date. I enclose it herewith
and the bill in

Please hurry the cargo down for re-
 gular sailing as early as possible. The
 cargo will be in the dock well
 before the ship's arrival. The cargo
 will be O.K. as far as the
 quantity is concerned. I feel sure
 the cargo will be all right.
 I will be in the dock soon.



Mr. George Scherff
Bardonia, N.Y.

The Walcott-Victoria
New York.

April 3, 1905.

Dear Dr. Schuch,

Your letter - has just
reached me.

I have of course
your wants - but some
difficulties in getting
them together
we have here
deducedly

Sincerely,
W. T. Schuch

The paper is of the type of double
 T. 12. The paper is of the type of double

has devoted. / how
that we play /

2. double the number of leaves - 2

in the work all right in the time

but I have not
order them

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A discovery of a new variety

very much when I
leave

10

The Waldorf-Astoria
New York.

April 3, 1905,

Dear Dr. Schenck,

Your letter has just
reached me.

I know of course

you would have some
trouble in getting

all together. For a day

we have time to all

Wednesday morning

and the paper says
P. 12 - Enigma

has deserted - I know

2. doubt the machine

will work all right

but it seems more

like my old friend

will take the decision

to not build a Polar

He discouraged me

very much when he

My dear Sirs of doubt
and sent to believe
that we play
hence - gone or have
been the champion
of the new business.
I think I have
written you well
for the occasion the
evening. I am writing

Dear Mr. C. H. [unclear]

It just occurs to me

that the boiler (and

hobble) of H. Hegerman

should be on the fire

before the [unclear]

over [unclear]

being [unclear]

and [unclear]

as in [unclear]

helicopter [unclear]

run the engine [unclear]

Sincerely

[unclear]

were shown in the
I am confident of success
in cooperation, as have
yet from my friends. I believe
they have doubts whether
Thomson.

A lot of disappointments
bothered the company but
the last night the company
long. So we feel better
while we are here
have the stores.

Sincerely

A. T. Tarkenton

The Waldorf Astoria
New York.

April 5, 1907.

Dear Mr. Schaff,

Your letter with German
translations just received.
In the next installment, which
should reach me to-morrow,
I shall write down con-
ditions according to
the German Patent system.
The clause preceding the
others. I can assure
you that these provisions
are, I believe,

It might as well put off the revolution down here. The
papers for England, also columns. President elect is a Penn-
sylvania, and France is a German man, it is a
Holy. The Italian Council is a social change.
made trouble and then as to the mechanics —
power of attorney will be to honor the Congress, rather
not to move. It should be as to Congress, rather
let it move. There is a doubt will all be ready.
It is as to the Italian Council. The Italian Council is a
German can see the sense of the party of Congress. The
I can be sure the Council does the better and con-
spires that the Council does the better. But there is
not shown in the Council work of
negotiate the necessity of working to better
more of it of wisdom. I can see the better
perhaps he is ready in the better. The

The Waldorf-Astoria
New York.

April 5, 1905.

Dear Dr. Scherff,

Your letter with German
translation just received.
In the next installment, which
should reach me to-morrow,
please write down an
introduction according to
the German Patent pattern.
Also please precede the
claims. I can not re-
member these particulars
now. I am,

last night at 10 off the
papers from England, also columns
of reports, and from 13
Hely. The Helian Council
made trouble and then
power of attorney will go
off to-morrow. It should
be done here but
it is impossible. The
Dinner can also be sent, for
I can't say the least des
important thing the Council has
not shown any and certainly
re-verify the necessity of
the moral effect of the
perhaps we are receiving

The Revolution down there. The
colossal President elect is a Penn-
sylvania man, it is a
radical change.

As to the mechanics —
to move the compressors, valves,
and all the rest, connection to
be made. It will be ready.

Steam shafts and some
pieces of connecting pipes
for motion and com-
pression. But there is

a tedious work of
fitting and fitting.
I can not tell how

long it will take. The

write them down as they
I am confident of success

in my opinion, the future
yet from my friends. I believe
they have been misled
Thomson.

A lot of disaffection
troubles the people but
the cause is not the
law. Do not feel
with the people
how to start.

Success

W. T. A.

The Waldorf-Astoria
New York.

April 7, 1905.

Dear Mr. Schaff,

I received your letter
this morning but my uncle
to send you definite in-
formation before this moment
when I write you that
some funds - base, by a
compression of the old, all some
will support 7' school
train. Charges are prepaid.
I beg to say to the President Bro

Very truly
yours
John D. Rockefeller

John D. Rockefeller
President of the
Rockefeller Foundation

They say car has been shipped. However as some time has
already been spent on them. The
a h-mover. It will be
important to get these parts to be arranged
new boiler in time. The for e.o.c.
dealers are sending another. Has promised to
Carleton which should arrive
a few days later. - about 1000
The work on the rest of
machine is well advanced
It is possible that we shall
have it all together here by
Tuesday. I have been dis-
appointed at some drawbacks
but it can't be helped. for my friends. Suppose
The emulations are quite to - they are leading off!
Wm. Emery. At Tall

3 1/2

to do that for his personal use
which you have on at least.
You ought to be able to
force the boiler to pump
out and as such, perhaps
a reported work on the
business.

I believe that is the reason
you purchase that the engine
has the best you can. The
my note I want by the boiler
more more with a name
keeping up with the constantly
boiler, please let me know
level

P.S. Please advise me when you are ready to say the
a new edition has been made in preparation of

W

April 12. 1905.
My dear Dr. Schmitt,

Travelling as brother again!
Otherwise I would have written
before this.
I am sorry to hear that
the T. M. Co. I suppose some
time will be some of
what seems big to me
but now. The more the

express the value of some
 representations for the audience.
 This is for them with pleasure
 take care of it. Express at
 friends, even in peccato, I
 we are asking the grounds
 with in the ground
 the people I fear the
 over him the end of this week
 I capture hell. The next week
 ought to bring the promised
 Marries. The audience
 I do not care if we are a loss, supporting
 You pierce in pumping the
 his name. That I was afraid

✓ for
 10/10/10

Comp. 10/10/10
 will

MS

April 12. 1905.

My dear Dr. Schaff,

Trouble, and trouble, again!
Otherwise I would have written
before this.

I am very sorry to hear
of the illness of the
M. T. R. Co. I suppose some
kind of letter has come up
which seems big to me
just now.

To-morrow they will be

that a lot of them at once
propose to delay
the business

express the value of some
preparations for the nation.
This is sure to be with pleasure
the work of it. I am not
prepared. Even if peccato!
We are not acting the grandest
work in the world. I am
not at all. I am not
the people I fear that of
we take the use of this work
I complete all. The next week
ought to bring the promised
services. The work is not
I do not care if it is a loss.
Your friend in promoting the
work

boiler full he dislocated me
greatly. I got your message
and take that it was not
practicable to suggest some-
thing by telegraph. Remember
that we fitted the boiler on
the 11th and the same afternoon
we were at sea. I suggest
you try to fill the tanks through
a hose leading from the
off all valves. I told the
mechanics today that the flow of
valves are leaking and he
suggested sending out one of
his men. That I was afraid

To do that for this reason
which you know me at least.
You ought to be able to
force the matter by making
it not even as usual, perhaps
a reported work done the
business.

I believe that the
your judgment will be
least for you
do the best you can. The
any rule I would by the order
once more with a new
keeping up ever since constantly
water should be low
level

P.S. Please answer inquired politely and say that
a new edition now complete is in preparation and

delay
the book is
not in view of this it will be

Crossed her bill Friday
to come for them. The
will need in order of

2 3/8" (Should be more perfect)
Kindly tell them so that he
can find something or prepare

Trimmer with pick & Trimmer
all morning. The then
they have in your ready
next Sunday. If everything
can be prepared Wednesday
preparation will be out Sunday
I think we ought to get it
ready.

Thank you for yourself just now
Sunday at 12 P.M.

The Walcott-Astoria
New York.

April 19, 1900.

Dear Mr. Schmitt-

Finally the Company has

come into existence as

you may see from inclos-

ed clipping of N.Y. Con-

tributed.

I. H. Hawks & T. W.

your Trimmer ready in

Trimmer ready in ready

were ready in ready at 12 P.M.

The Waldorf-Astoria
New York.

April 19, 1905-

April 19, 1905.
 Dear Mr. Schuyler
 I have the company's
 letter before me. I have
 been from in the
 clipping of N.Y. Con-
 stituent.

J. H. Hendricks, Treasurer
 of the Road, name in
 the road book, to be kept in
 the office of the
 road, at 12 P.M.

last night, for which, as the
new members of the club, fresh.

I repeat information, and
no mention was made in
those papers.

My speeches for the evening
were printed in the morning
paper from today. I
am interested in doing so
if I can by any means
be printed in the
single copy of the
new to the same as
before in the same form.

likely as the
so fresh,
which I
made in

Long we had a dream
with the power of surprise.
I had no thought over
of the probably not expected

the following
the house
day. I
day and
night
all.

hole. This makes it necessary
to end off a piece
and serve as an entrance
day about one day, very
much as you may

of 80
as I
from here

plans for arrangements,
to reach you
I remain, If Clarke

Could be himself Friday
he could get them. He
will need an order of

2 3/8 "

(Shoulda more perhaps)

Kindly see Mr. So that he
can find something or prepare. For

Timothy wants get a Traveller's
all around. That then
a bag he is for some recommended
next Sunday. If everything
can be prepared tomorrow
to present will be on Sunday.
I think we ought to get it
ready.

Thyself for yourself just now

Sincerely
Wm. F. Webb

at the filling cases

provided fully morning

Please only conspicuous

The picture is the filled

in the upper compartment
in the wheel 1, the

the other which goes

the lower compartment
series to have) expanded

the motion, the

the wheel commences

to do this work

are that he

and make a

of course

he can and make any

in filling

to its

position

by the

it goes in

by the paper, Bend,

you have the drawing

of the mechanism.

of a similar shape

The Waldorf-Astoria
New York.

April 19, 1900

To Scherff

I was expecting you to
this evening to have seen
something from you about
the matter.

The two pistons for
compressors will be with
you tomorrow. Please
afternoon. ~~and~~ ~~that~~ ~~note~~
Not necessary to

At the following corner
Keweenaw Ferry morning
Please note compositions
The problem to be solved
in the upper composition
is marked 1. any other
the other which goes
into the lower composition
series (have) exactly
the same
short and long
ology to do this work

is correct
morning
yesterday
of course
he can not make any
compression error in filling
the piston
cylinder
therefore
you have the drawing
of the mechanism.
work by a machine shop

will be necessary, To
show the fact in light
as possible. The work

with the same will

will be the same

the other work to be

done by

the same person

has been the same

long time connection

I got by Robert L. Day

Finances Status quo ante

Relation

Finally

to the same

to the same

laboring to satisfy our
 dying as we ought to
 men the machine Sam.
 day.

[Faint, illegible handwriting]

Handwritten text, likely a signature or name, appearing vertically on the right side of the page.

The Walworth-Astor
New York.

July 23

I believe that I must and play into Sunday
Safely dependent on her evening, having to sell
for giving us her home if clock should come
improving of least should Friday (the morning) and
that poor so further than not be with a certain
in her clothing. The work; that is the

77

we found it impossible to do, I am disappointed that
I should be so today, feel I am a failure.
I have been with the clock. It is no other than
providing for the family, all parts of the com-
mission. I am sorry, however, that I am the

The Waldorf Astoria
New York.

April 20, 1915

Dear Mr. Schuyler

I found interest in
my review home life this
evening.

To have been able

There is no possibility

the fact however that

in my life having another

celebrity from the

then going let me

I believe that I cannot
safely depend on her
in giving us her house if
temporarily at least should go
that far so far from home
be too cloudy.

It is a very hard
to find it impossible
to find the good body. I
have an eye on it
providing one on the
with some other days, for

I went and stay till Sunday
on her evening. I went to see
her home in Clark should come
least shall Friday (the morning) and
the then not be able to stay
the work. I should be
further than the higher stage of
the morning.
I am disappointed when
I hear from you, as
today feel I am almost
on this. It is an awful state
at least of the con-
dition, for now will be in the

The Waldorf Astoria
New York.

New York 1904-
Sept 20

My dear
your much

are nice some money
I suggest I will

not ^{for} but ^{my} money
if I do not like from
you tomorrow I will
go down to Washington
and look over Fenwick

Out I have all

the money I want
no more feeling

Yours S. O. Saxe

The Waldorf-Astoria
New York.

New York 1903-
April 20

Mr. Furler

you must
give me some money
for my interest I will
not ^{stay} longer
if I do not hear from
you to morrow I will
go down to Wadsworth
and look you Furler

Out I have all
the money I want
no more feeling
Yours S. O. Saxe

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS, BOLDT, PHILADELPHIA



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
HOTEL BELLEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
BILLY BUILDING RESTAURANT,
PHILADELPHIA.

GEO. C. BOLDT, PROP.

The Waldorf Astoria,

Fifth Avenue, 370 and 4th Streets
and Astor Court,



THE ASTORIA

New York April 21 1905

Dear Mr. Schmitt,

The printers have been expected this afternoon with 4 o'clock train. But now we suppose I come out tomorrow noon and I am to be at Wednesday the Sunday. "For Menschel's double gold bank." Have my get before the printer that confronts you with the Express Co. in very much disappointed at the delay of your little transaction. This evening probably the 4 valves (specimen) for the machine will also reach you. This means a new difficulty.

The rest of the machine will be ready Saturday and I can order bring it on

The same has been done. If it can be
expressed in 4 P.M. on Sunday then
released and reach you Saturday evening.
To day I had an appointment with
my B. but it is not suitable. They have
done much more work. I have
for progress for the day. You will understand
that the I expect probably that
dear and I expect probably that
about next week day. Just as soon
as I have the machine in working order
I have that I shall be on horseback.
The whole ought to surprise every body.

Yours truly

W. F. Felt

P.S. Hope you have received my former
letter explaining the fitting of
pistons, so as to get them as perfect as possible.



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK
THE BELLEVUE-STRATFORD, PHILADELPHIA



THE BELLEVUE-STRATFORD



THE ASTORIA

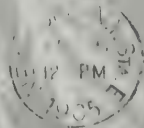
The Waldorf-Astoria,

Dear Mr. Scherff,

New York April 26 1905

We have agreed to meet at the Waldorf
Friday (my rooming) to-morrow evening. If
you do not have time to go further in
this matter you will have that we want
you to be present. I think you can take the
3 P.M. train to New York and be left here
after your dinner. In the afternoon of your visit
we have some special arrangements to make your
coming.

It is possible that you will want to
bring out some part of your collection, possibly



Mr. George Scherff

Wardenclyffe

THE WALDORF



THE BELLEVILLE STRATFORD



THE ASTORIA

Dear Mr Schaff,

New York April 24 1901

I was awfully disappointed to receive
your letter indicating that you, Clerk, of
Course that does not apply to the
case which is to come.

The evening I have deposited the
bookings (given under) and they will
reach you with 11 - train as I
have already stated. The train comes
rather early & detained at 6.15 P.M.
and I am hastening to catch the mail
and tell you that I shall again

Mr George Scherff
Wardens of the

ask Herbert to come over the house
in the afternoon and to show at 7 P.M.
It would be best to have steam in the
evening. However, if Cloud can come
either Saturday (6-noon) evening or very early
Sunday he ought to able to turn out
the cylinders and fit the two sleeves on
them by Sunday afternoon, for there
is not much work to be done at
this kind of machinery. Suppose you try
to communicate with him on receipt of this
and ask him to come Saturday evening -
He ought to be the better, but it is Sunday
he might be far enough that we could
leave the machinery off course if he comes
out on the 11-40 train. There will be
some little time. I can see how I
can bring out a change but I am afraid our
hurry. There is nothing to the effect, unless
that you can communicate with Cloud and have
some steam at the evening.

Do not mind gauges and wood flanges Henry at Tarkenton
The boring of the cylinders and fitting of bushings is the important work.
P.S. Changes on bushings are prepared, Has the repeated pieces arrived?

NEW YORK CABLE ADDRESS "WALDORF NEW YORK"
PHILADELPHIA CABLE ADDRESS "BELLEVUE PHILADELPHIA"



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK.
THE BELLEVUE-STRATFORD, PHILADELPHIA.

The Waldorf-Astoria,

Dear Mr. Schaff,

New York April 24 1905

I was amplified disappointed to receive
your letter yesterday that up close of
course that does not apply to the
cheer which is to come.

Mr. [unclear] I have dispatched the
bookings (your [unclear]) and they will
reach you [unclear] 11 [unclear] as I
have already [unclear] the [unclear] You
letter [unclear] delivered to me at 11 P.M.
and I am hastening to catch the mail
and tell you that I shall again

ask Hartman to come with the team
in the afternoon and be there at 7 P.M.
It would be well to have steam in the
evening. However, if Clark cannot come
either Saturday (to-morrow) evening or very early
Sunday he might be able to turn out
the cylinders and put the two sleeves in
them by Sunday afternoon, for there
is not much work and he is good at
this kind of machinery. Suppose you try
to come acquainted with him and arrange of this
and when he can come. Saturday evening?
He could do the oiling, lubricate and ready
he might be for everything. But we cannot
leave the machinery off course if he comes
out on the 20-40 have them with him
and little bit more. I can not see how I
can bring out a change but I may find one
to-morrow. Try to telegraph to the effect, please
what you can communicate with Clark and have
some steam in the evening. Sunday is for
do not mind gauges and wood flanges Sunday is for
The boring of the cylinders and fitting of bushings is the important work.
P. S. Changes on bushings are proposed, Has the repaired piece arrived?

The Waldorf-Astoria
New York.

April 29, 1906.

Dear Mr. Schuff,

Mr. R. was not down
today and I shall
have to look for him
again tomorrow. Last week
they were not quite certain
that he would come to
the office before Tuesday.

Have ordered one box
of ~~fruit~~ ^{fruit} ~~fruit~~ ^{fruit} \$4.37 =
very rich in Ascorbic 6%.

... is to be spread
about 500 lbs per
acre. They are about
the ground cultivated
so far (the whole
melons in place). The
cucumbers seem to be
the largest (American
Agricultural Chemical
Co.) and they seem
to know all about
Long Island. They pro-
posed to send it out
You will get 100 some
new bottles which I

spread
from
about
under
under
The
the
American
time
can
hand
of pro-
at once
so small
of I

went to me to pre-
pare my sensitive device,
then do not use the
but just carrying away.

The Peace people are
preparing now my call.
The other has applicants
and 400 are studying
for Anderson will go
off to-morrow.

Have expressed I have
bills for placing the
small machine behind
by agreement. I think
that when it is sent

The Waldorf-Astoria
New York.

Apr. 29. 1906.

Dear Mr. Schuff

The Pearson Co. have
shipped all except
the small copper-
fence. They tell me
that the large copper-
fence are rather weak
but I think they will
do as well as ever used
to handle them except
when empty.
Love & etc I forgot

to tell you to make
up another copy of the
two papers which
we shall have with
Bess later

I am expecting to
arrive one day after
6 o'clock (the
Lodge to have been
ordered (3 papers) and
I suppose ready for
a test

Butler's class and
he wanted something
but I forgot that it was

which I

but when it is sent

making

to a few answers

which he will write up all

will send things we may

send yes,

I thinking he to plan

the more answers)

) find the the plan

behind the by saying

) or in the book. Connection

by for the reasons is not

difficult as you said

from the large series

now is about 20

it was done before and then

Very

run under the gallery.
If we should be
set with the external side
the other way.

Running

Tail

Be.
The
step
the
center
that
center
but
do
to be
the
the

The Waldorf-Astoria
New York.

May 1, 1905.

My dear Mr. Scheff,

I intend to come
out to-morrow and stay
overnight. I have
been thinking of this
for some time.

Will you please
write me further details of
the recovery to be
made one more report.

Yours very truly,
J. H. P.

Will Eversman & Peter as
immediately on receipt
of this so that when
I am the shaft with
the bore can be headed, but
I not attempt to oversee things
the shaft, the bore will I am
not trying to pull it out
and to make
have all the parts clean
and wiped out, also the
valves so that we do
not have delay in pulling down
the sections again together. As
I intend to use steam as a

and Peter as it is very impor-
tant to provide for la-
boration in our first

be headed boats with the machine,
I insure they are all

here and I am perfectly confident
that they will only be a little

longer in going
which done will make
only clear the machine O.K.

also that I have already found a
way of pulling in the ropes
together. The machine was not
seen as expected and I

shall derive the best re-
sults for the world I know
of by the time I come
out. It is my belief
that I shall direct many
for good in the shape
of a plan. I have all the right
tools which are necessary
and in good order. I
will be together and close
at hand.
Hoping the war will soon
have a thoroughly satisfactory
result I remain
Yours sincerely
A. T. T. T.

shall derive the best re-
sults for the evil I have
up by the time I am

out. It is very likely
but I shall have some
few days in the shape
Plan. have all the capital
which is now

newly begun and
at least

My dear Mr. Garrison
I have a thoroughly satisfactory
result I am

You must

As True

The Nassau Astoria
New York.

May 1. 1845

My dear Mr. Garrison

I will be some
but I am not sure
I am not sure

I am not sure
I am not sure
I am not sure

I am not sure
I am not sure
I am not sure

will examine to Peter as it is very impor-
tant to get our receipt for to provide for la-
of this so that when execution is our first
I am the shape with execution in our first
the base can be handled, but will be there,
No and attempt to answer George in my own
the shape, the time will I am perfectly con-
not 1/2 - distance but only a
as 1/2 in your
will be made. which done will make
some old the party claim the medium D.K.
and upon it, also the I have already found
values so that we are
not have delay in putting down of money, the
the picture open together. In drawing over that
I intend to use them as expected and

NEW YORK CABLE ADDRESS: "WALDORF," NEW YORK.
 PHILADELPHIA CABLE ADDRESS: "BOLDT," PHILADELPHIA.



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
 HOTEL BELLEVUE, PHILADELPHIA.
 THE STRATFORD, PHILADELPHIA.
 BULLITT BUILDING RESTAURANT, PHILADELPHIA.
 GEO. C. BOLDT, PROP.

The Waldorf Astoria,

Fifth Avenue, 33rd and 34th Streets
 and Motor Court,



THE ASTORIA

New York May 8 1905

Dear Mr. Scherff,

I have just received your letter,
 in regard to the machine your report
 is perfectly satisfactory to me. These
 things will never happen with
 proper precautions. I am fully
 convinced that the compressor has
 a great future. You will be
 surprised to hear that you are
 working on it. The machine will
 be a B. B. machine with the
 same as the other machine.

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "GOLDT, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK
HOTEL BELLEVUE, PHILADELPHIA
THE STRATFORD, PHILADELPHIA
ELEGANT BUILDING RESTAURANT,
PHILADELPHIA
GEO. C. GOLDT, PROP.

The Waldorf-Astoria,

Fifth Avenue, 370 and 372
and Astor Co



THE ASTORIA

The 9th May 9 1905

Dear Mr. Schorff,

I was fortunate enough to solve the important cable problem today and expect that the car will be delivered by the time it reaches you. The good result is unfortunately spoiled by a number of troubles. Please notify me as soon as you are in the position to get up steam. I would like to get down for a day or two if it be possible. If not I shall have to engage a machine in case you I think I can get a job done for P. as Reilly.

In order to avoid accidents such as the last we shall have to take the air from the lungs of the reservoir

kind of direct from the compressor as
he does now. Furthermore it will be neces-
sary to connect an inlet. I would suggest that
for the next experiment we use the same
of the two variations for my compressor and the
large reservoir in the corner (pipe 16" diam)
to the Regulator - Sargent Compressor. You
can easily change the pipe connection. I
repeat it now to avoid misunderstanding. The
the air pipe for driving my engine should
come from the top of the reservoir and not
from the bottom. Furthermore one of the new
tires (2 connections) should be used for
lubrication. The overcoats of the con-
formers (Superior Sargents) which are
not a good lubricant as they contain
much grit.

I am perfecting my plans for the next
test which I trust will be much more
satisfying than the last.

I have a plan to buy Mr Crawford's
soon as we have everything in shape.
He is a fellow with a big heart and my
wishes to help me to get the results with
my plant. Sincerely A. T. T. T.

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "BOLDT, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK
HOTEL BELLEVUE, PHILADELPHIA
THE STRATFORD, PHILADELPHIA
BULLITT BUILDING RESTAURANT,
PHILADELPHIA
GEO. C. BOLDT, PROP.

The Waldorf-Astoria,

Fifth Avenue, 720 and 74th Streets
and Motor Court,



THE ASTORIA

New York May 16 1905

Dear Mr. Scherff,

I wrote this morning in relation
to some improvements on the
subject. After a careful con-
sideration however I find that
under the present circumstances
a quick result is what I need
most. Accordingly I have exercised
my wish to make things so as
they are now, and wish you to
place the picture in the upright
position, due to the nature of the

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "BOLDT, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
HOTEL BELLEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
BULLITT BUILDING RESTAURANT,
PHILADELPHIA.

GEORGE C. BOLDT, PROP.

The Waldorf-Astoria,

Fifth Avenue, 330 and 340 Streets
and Astor Court.



THE ASTORIA

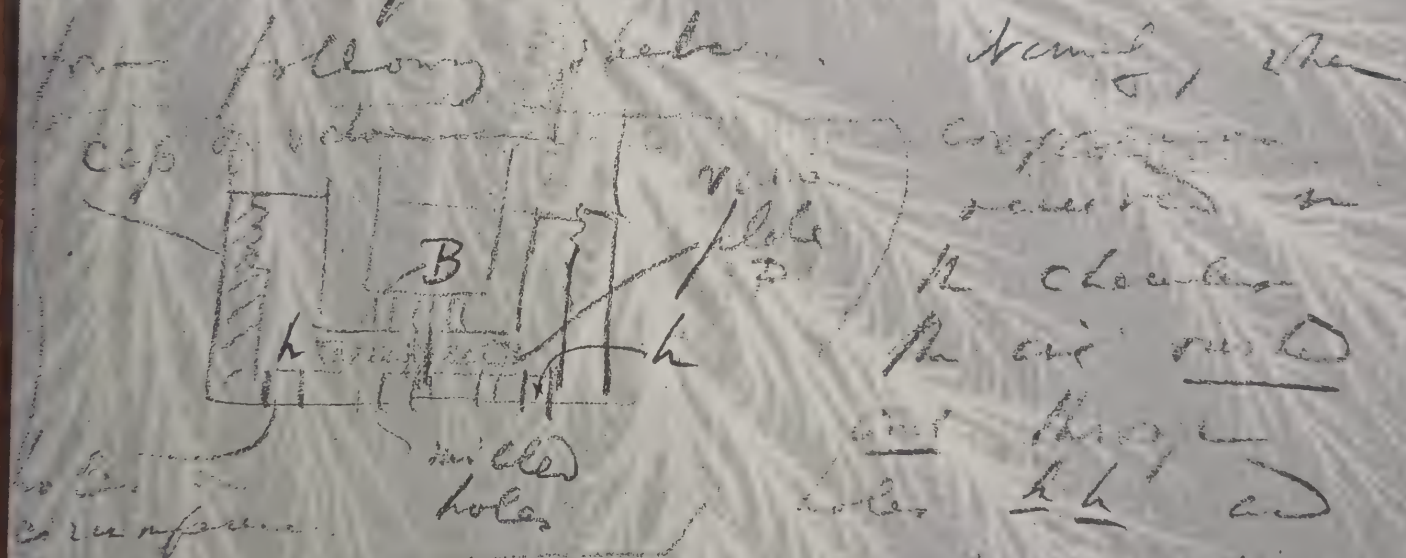
New York

190

It seems to me you must make
a mistake, and be careful
in screening the right and left
breast nipples, which join the
vertical trunk pipe at the
compression castings. Do not forget
the graphite period! There should
be at least one valve - the
one preferably on the vertical pipe.
If you will do this with
as soon as possible I think
the valve shall be the compression

in slope to the south our friends were
 shortly with the necessity of color
 some changes.

I discovered the machine on the valves
 a bit with the last. The compressed
 valves were fairly good but the section
 arm of handle but the section
 valve was tied to really could not
 work. You will see the necessity



There was a hole in the
 plate & a small hole
 the valve was popping
 the hole of hole diameter
 part of hole h h as
 first holes. Due

to prevent the valve
 to order to be
 the plate P should
 cover a part
 of the hole h h as
 can be seen in the

V. T. T. T.

NEW YORK CABLE ADDRESS "WALJER", NEW YORK
PHILADELPHIA CABLE ADDRESS "BOIDT", PHILADELPHIA



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
HOTEL BELLEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
BULLITT BUILDING RESTAURANT.
PHILADELPHIA.

GEO. C. BOLDT, PROP.



THE ASTORIA

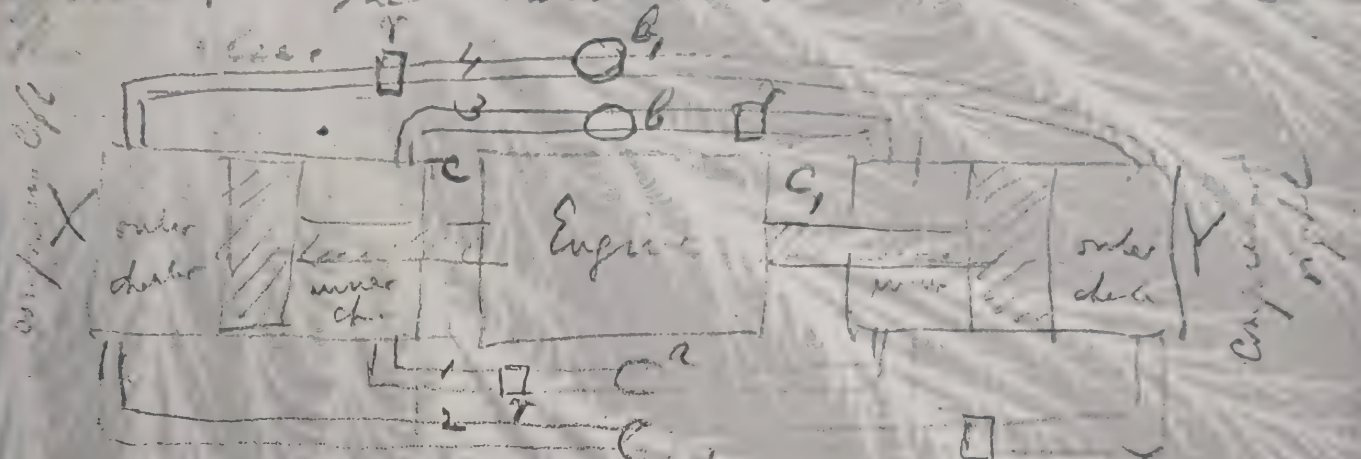
The Waldorf-Astoria,
Fifth Avenue, 330 and 340 Streets
and Astor Court,

New York May 16 1905

My dear Dr. Thayer

After carefully examining the
various designs submitted, the committee
decided that the various should have been
conducted differently, as in the following
first in detail. Namely, there should be
but one suction and one pressure valve
for each pair of pressure chambers, and
a corresponding one reading apparatus
for the advantage of the operator. The
instruments, and also the other chambers
were connected in pairs, both
above suction and compression and
the in each of these four chambers

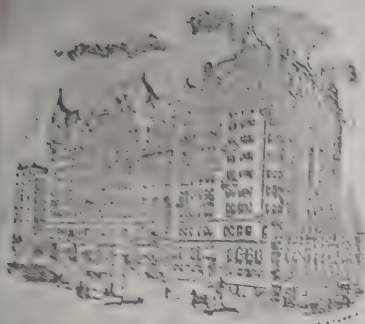
chamber there is a valve (for suction
 or compression) there, and another below
 the valves, my work the two
 compression chambers will be equally
 affected. The sketch below will make



1, 2, 3, 4 common chambers, a, a, suction
 valves, b, b, compression valves.

the arrangement of this bed will seem
 perfectly balanced. Furthermore it
 will reduce the work to half.
 More important still, it will make
 the work more sure. The pump will
 run so twice the speed of air.
 There are also advantages. There is
 the fact that there is a certain increase
 of waste space. And there is the fact

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "BOLDT, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK

POSTAL BELLEVUE BUILDING

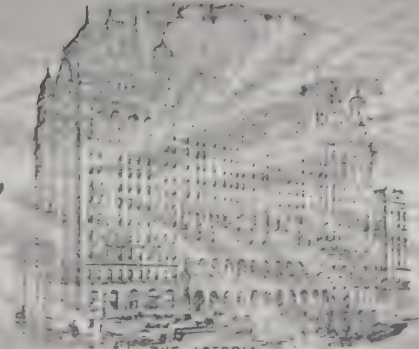
THE SPRATTON BUILDING

BULLY BUILDING

GEORGE C. BOLDT, Prop.

The Waldorf-Astoria,

Fifth Avenue, 170 and 172 Streets
and Motor Co



THE ASTORIA

The Astoria, 190

is intended to be a connection
not by all means an improvement
that be adopted for many reasons
and one.

With the intention of making it as
easy to place the pistons by narrow-
ing the passage of the proper pistons and
valves for the chambers. To indicate suppose
that X be the lower and Y the upper compression
the machine is vertical then XXX
with the said adjustment pistons.

In addition to this I find the
cushion for the any in short in
employment and I also plan to originate
new cushion CC,
with these improvements the compression

will not perfectly agree to a long re-
sponse satisfactorily in the original position.
I am enclosing the water vigorously to
assist in giving you a pleasant sea
breeze when you see the water and
in operation.

From the water, I am
not proud of the
I have some hope for
the future of the country. In this case, I shall use
the water.

NEW YORK CABLE ADDRESS "WALDORF" NEW YORK
PHILADELPHIA CABLE ADDRESS "ROLEY" PHILADELPHIA



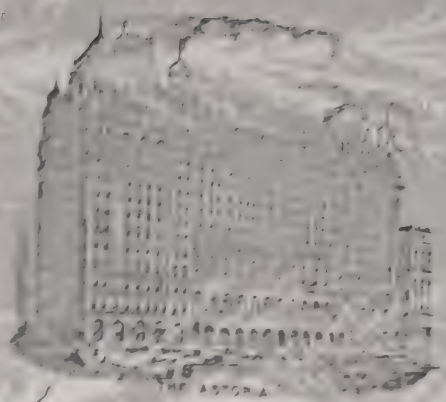
THE WALDORF

THE WALDORF-ASTORIA NEW YORK
HOTEL BELLEVUE, PHILADELPHIA
THE STRATFORD, PHILADELPHIA
QUALITY BUILDING RESTAURANT
PHILADELPHIA

CEO & ROLEY MARK

The Waldorf-Astoria,

Fifth Avenue, 330 and 34th Streets
and Motor Court.



THE ASTORIA

New York May 17 1905

Dear Mr. Schuff,

Your letter has just reached me.

I am glad to hear that you are
doing well and hope you are
the same.

It is tough to think that
the children have had a day
but the pneumonia is not
fatal now. I expect days

to ought to feel better or else
be very sick.

I shall be able to come out

to - evening (Thursday) as yet, I am sorry
to say. The problem is only a small one
and I have been successful in
removing the trouble.

You are right that the Committee can
do a great deal but it would be
better to put up the values. Special
provisions are necessary for the changes pro-
posed. The Committee will be able to
offer all the values in proper
proportion. The Committee is in
favor of the changes
and can be counted on for them.

Yours

V. T. Tuck

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS, BOLDT, PHILADELPHIA



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
HOTEL BELLEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
BULLITT BUILDING RESTAURANT,
PHILADELPHIA.

GEO. C. BOLDT, PROP.

The Waldorf-Astoria,

Fifth Avenue, 33rd and 34th Streets
and Motor Court.



THE ASTORIA

New York May 17 1905

Dear Dr. Schmitt,

Your letter has just reached me.
I am glad to be hearing from you and
doing well. You are a very kind
friend.

It is tough to think that
the children have a cold & stay
but the parents must have
patience. In fifteen days
he ought to feel better or else
be very sick.

I shall be glad to come out

to-morrow (Thursday) or yet, I am sorry
to say. The problem was solved
although I had been unsuccessful in
understanding the matter.

You are right that the committee can
be easily misled and it would be
better to put up the values. Special
pictures are necessary in the changes pro-
posed. That the method will be of
great value to proper de-
partment. The committee is in
favor of one for it. The changes
can be carried on.

Yours

W. F. Fick

The Waldorf-Astoria
New York.

May 22 1901

Dear Mr. Schmitt

I have thought care-

fully over one experi-

ment with the me-

chanical part right and

in connection to the en-

richment that the cus-

dom is well as the

The provision of the scene

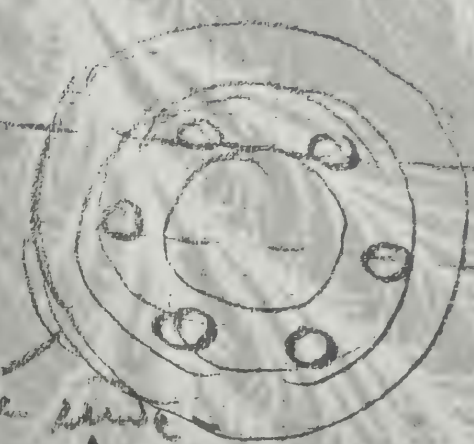
The Waldorf-Astoria

at rest from ———
moral ——— Energy ———
they ——— will ———
benefit of the few ———
the ——— are ———
carried out well ———

I hope you have understood
that all about the first
thing of the independence
born to the common floor. Be sure
lay the holes out on paper
a piece of thick paper
or card board and the The

from a
 Energy
 will not
 the few
 are
 all
 low under
 the parts
 dependent
 ment flow
 out on
 paper
 The
 The position of the cells
 have shown to date

cells can drive. The
 line forming the center of
 the cells never to
 the wall shows to possess
 cells. Look then;
 wall



bron tubing
 attached to
 Jagersoll
 Company.

Base under
 out on
 paper
 The
 The position of the cells
 have shown to date

more insulating besides,
 Put

minutes by placing a
from roof. I think
you did this before
Center should be on
a line of symmetry in
the symmetrical expression.

I calculated that you
will find the holes
about 11" deep and
will send out bolts
accordingly. I think
16" bolts (under the
head) will do. The prev

The previous of the same

The Waldorf-Astoria
New York.

George
have you had the
in 4 1/2 " This will
be 5 1/2 - 3 1/4 "
for the will
express the balls and
some lead to iron
the you put out and
will the carbon
which the lead shot
on the sleeve and
perhaps also on the

or can only be

Stop you should do more
of this kind of work. Put
the steam cap upon
engine shell on an
arrow as far as it be-
lieve you and turn it, first
you will then see
the hard spots where
you can give down
Regarding the process as to
you will do as for
told as Opif can you
ever make it will
be

5 The power of the circle
you should be able

do more intelligence besides,
Put On The staff of
you course you will have
an as it be slip on the
in of piston & proceed
from a mile long. Once
when you begin you will
don't soon be absorbed
even in the intensely work
for which I envy
come you for I shall
with him in a capital

lead — and to. The for

Lincoln

hawaii

She's Peter's girl though

Re. ⁶ Re. Cocking paper

Monica Thayer

422

Will not go

Handwritten signature

house of Glycerine

January

in haste

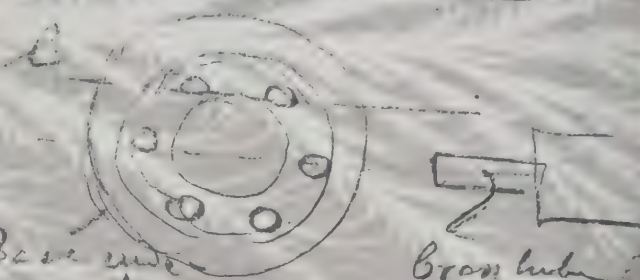
W. T. Ford

Now you hold the
 in $4\frac{1}{2}$ ". This will
 leave $\frac{1}{2}$ - $\frac{3}{4}$ "
 for neck. Since
 to press the balls and
 some lead to narrow
 the you find out
 and the collar
 when the hand goes
 in the sleeve and
 is tight also on the

Resisted from a
 Ring I believe will not
 be so much of the fear
 low temperature will
 be out well.

I believe you have under-
 stood all about the form
 of the independent
 base for the central floor. Be sure
 lay the holes out on a piece
 of thick paper
 or card board and then

holes can drill. The
 breaking the centers of
 the holes were to
 be done to prevent
 being done. Look this;
 wall



Brass tube
 attached to
 Ingersoll
 Company

The position of the centers
 of the holes should be deter-

Staff you should do have independent besides.
 Put On The shaft of
 the steam (cylinder) on an axis you will have
 engine shell) as far as it be slip on the
 arbor as far as it be slip on the
 vice p and turn it piston a piece
 you will then see a mark. Once
 the hard spots where you begin you will
 you can find down soon be absorbed
 Repeating this process at the intervals with
 you will do as for which I envy
 would as Op's can you for I shall
 ever make I will have a capital

enclosed
full
to the
and, the
the various
inches and
under high
the
of book
I expect
is a
at a point
opening
for the
every one
not change
at least
for reason

choices of Sept perfect of letter
being of paper of the same, 6)
As shown The Waldorf-Astoria
on below New York. *Received*
I can be
satisfactory.
May 23 1905

Dear Mr. Schmitt
I will please
to know that I have
found an error
in the
in the
of the
I shall
in the
in the
in the

Very truly yours,
[Signature]

bury
house
its close
well

[illegible]

will be so calculated
that the full
compression of 100 lbs
of steam is obtained, the
air which still remains
in the chamber (between and
valve passages) under high
compression will, when

thru the
being of
the steam
on the
valve
passage
let

~~the piston~~ ~~is~~ ~~back~~
away from valve B) expand
so far, that it is a
little below the atmosphere
the pressure, then opening
B) the steam will expand.

formed
the
the
the

- Advantages of this arrangement
- 1) The suction valve must always
draw, can not draw air back
 - 2) Compression is higher for reasons

[illegible]

The Waldorf-Astoria
New York.

May 23, 1905

Dear Mr. Scherff,

I wrote about
holes in the house
and things of that
nature to the
company and to the
board to improve
the building.

Very truly,
John D. Scherff

... for the
compression of the
below are shown in a
with reference to
the rails on the
Virginia Railway
that the rails of
Baltimore & Annapolis
Railroad are in
fact the same
as the rails of the
Baltimore & Annapolis
Railroad. I have
to say the rails

low the
distance
selected
the
the
I think
on the low
is concerned
from behind
the hole
the
is
the
the

to drill
will you please give
me the
I will mail.
I think the is for
on the low
is concerned
looking
from behind the
the hole
the
is
the
the

I have written on
on the left. The

I right? This is

all the necessary to
know for the by con

as found as the like.

Really yours

Sincerely yours

W. H. H.

W

The Salvoet-Historia
New York.

May 22, 1905

Dear Mr. Salvoet,

I hope this is

all the necessary

for the up com

in what is the

history of the

history of the

the

Y

the

the

the

the

the

the

the

the

the

the

There are the "which are ones,"
compression and volume. The y please give
values are related in the dimensions
with reference to the volume part.
The values on the y-axis are for
compression and volume. I think that is for
least to the others. It is a lower energy
Bicycle. There is a looking
volume for the looking the volume
volume of pure port. The looking the
volume of pure port. The looking the
volume. I think the looking the
to look the looking the

engineering skill.
Six both side in
enough, the other
has an reserve.
Can I call on
you for drilling
the holes in the
beam - I mean in
the base of the beam.
There is something
that is capable

The Waldorf-Astoria
New York.

May 23. 1907

Dear Mr. Schuff,

I have started
to work today
and will be at
the office all day
today. I am
sorry I cannot go
to the wedding of

Sag - One inch, then
melt lead and make
it very hot. Pour
in some lead - say
enough to fill half
of each hole. When
the casting is in place
after the lead has
been removed and
the holes filled full.
Finally a little larger
drill can be run through
the holes in the casting.
Please do as much of this
as you can. Sincerely
yours

The Waldorf-Astoria
New York.

of showing the exhibition
of my secretary the
over her. I want
provided as follows:
First I want to
get holes in a piece
of cardboard, or thick
paper. Mark the
center of the holes on
the casting. Mark
them after the one

I find Hosiou all right in every
Friday and is then expected.
from my experience I expect to
experience at the day right bolts
piece of my Soreness. But, the
The one I think is better, drive for
the improvement and the cannot find it
are being carried out. As to
the more I am trying out the
concerned that the holes I rely on
machines will be your well designed

The floor with the
There is view the
hole comes in. The
Pete drive the holes
would not pay to
to the depth required. Run the engine just
Then put the bolts for drilling six
in their position. holes $\frac{1}{2}$ inch in
Then put the castings
diameter through $\frac{1}{2}$ "
(being in its place) of cast iron.
with the bolts passing down at the
through the holes - Suppose this is all
supported by the all sticking out
drilled by hand power above the castings

skill,
the mile in
the other
reserve,
all on
drilling
in the
recuperation
the lower
something
capsule

The Waldorf-Astoria
New York.

May 23. 1934

Dear Mr. Schuff,

I have started
the work 6-day
type the re
program
To-morrow I can see
come out at today
after I have
to the wedding

with the
to make

Four

The Waldorf-Astoria
New York.

of showing the ambition

My friend Hobson all right
Friday here is then - respect
for my services I expect
appearance at the day
place of my services. But
The more I think of
the engagement which I
am being carried on
the more I am
convinced that the
business will be your

The floor will be There is

and Hobson, all right in every
way is then respect.

earlier I expected to
at the day eight bolts
my former nuts and washers.
I think as the last ad bolts
would drill for
around the central floor and
corner in hammer. So to
I am laying out the
the holes I rely on
the your well designed

There is also the
the comes in. R

engineering & will
Six bolts will be
enough, the other
has an reserve. See
Can I call on I
you for drilling
the holes in the
beam - I mean in
the base of the beam?
There is something
the is capital
to the

Sag - one inch, the
melt lead to make

To the wedding 7

then
make
our
reg
help
we
bliss
ten
D
all
age
urge
any
the
are

The Waldorf-Astoria
New York.

of showing the ambition
of any secretary that
ever has. I would
proceed as follows:
First I would lay
out holes on a piece
of cardboard or mill
paper. Mark the
centers of the holes on
the cardboard. Mark
them after the on

... will be your

The floor with the Then
... the ... Then ...
Peter drill the holes ...
... the ... requires ...
Then ... the bolts ...
... their position ...
Then put the ...
... in its place ...
... the ... passing down
through the holes - the
support ...
... by hand power above

be the your well described

There is also the
the tub comes in. It
the holes would not pay for
required. Run the engine just
for drilling six
holes $\frac{1}{2}$ inch in
diameter through $\frac{1}{2}$ "
of cast iron.
Suppose this is all
the person does at the
holes - the bolts are
all sticking out
and some above the casting

Bag - one inch, then
 melt lead to make
 it very hot. Pour
 in some lead - say
 enough to fill half
 of each hole when
 the ~~lead~~ is in place
 after that the latter
 can be removed
 the holes filled with
 finally a little larger
 drill can be run through
 the holes in the casting.
 Please do as much of this
 as you can. During & after

of the
 by any
 ever
 process
 +
 first
 out of
 of cast
 paper
 unless
 the cast
 them of

better for the company
probably. They were
altogether too loose,
the joints then to
early times. And they
been close fitting the
last accident and
but have occurred.

The Waldorf Astoria
New York.

May 24, 1905

The Peace people
are taking care and
improved receptacles
of steel. They are
work much better
than the (certain
not putting) but
consequently of the
downed in good shape
to the
tubes from the

draw it out of a
rock.

Please by address
to work them as much

The Waldorf Astoria
New York.

as you can. These
looking for the
and by the way
much. The stone
I am willing to
been occupying
I am going to
from Hoboken
with the
in the exact
for drilling the bronze
Sunny & Paul

2. I go for the carriages, 1
 4th. couple consider-
 able. I found the
 carriages in the
 house looking up
 the road. The
 carriages for the
 hotel looking
 to the order, new one,
 the one for the
 hotel. The new one,
 the carriages for the
 of the carriages, also
 found looking, —

a few days delay but
I hope the record
will be commensurate
to our sufferings.
The next time we put
the machine together
ought to be a
longer one. I am
I have a section
in good shape I can
be with money what
more. And with no more.

The Waldorf-Astoria
New York.

May 24, 1905

Dear Mr. Schaffer

I was very busy this
afternoon but sent
on the two (entire)
and personal brochures -
consequently I have
devised a good scheme
for giving to the
Ladies between the

The Waldorf-Astoria

For convenience the
less red ~~than~~ ^{the} ~~land~~ ^{the}
I shall see here all
only good, the same
and ~~the~~ ^{the} ~~good~~ ^{good} ~~solid~~
to everything else that
may be necessary down
to have ~~the~~ ^{the} ~~land~~ ^{land} ~~in~~
the land but I should
something curious to
complicated to explain
to you showing that
we had been ~~the~~ ^{the} ~~land~~ ^{land}
The Ice Men people of the
are making the steel - ~~the~~ ^{the} ~~same~~ ^{same}

... the ...
...
... all ...
... the same ...
... sold ...
... the ...
... done ...
... I ...
... to ...
... explain ...
... the ...
... people ...
... the ...
... permit ...

... a ...
... one ...
... a few days delay but ...
... the ...

bells for the Congress
people. They were
altogether too close,
he protests them to
many times. But they
were close during the
last accident and
they have occurred.

The Peace people
are acting hard on

improved relations

up steel. They will for 9
work well better

draw it out of a
rock

The Waldorf-Astoria
New York.

for the
purpose of
providing
the
will
be
for the
also
with
the
places
the
bronze

are taking the steel - per

brushings. I am
trying to ~~finish~~ ^{finish} one
work as much as
possible.

My conviction is that
with all these improvements - The
ventures the machine the
will prove a great success
surprising to you.
As you see the changes
are more extensive
than I thought of
first and it means more

people of the temperance, also
the state - permit taking

and a few days delay but
I hope the report
will be commensurate
with the sufferings.
The next time we find
the machine together
again ought to be a
four day job. One
change I have the machine
in good shape I can
do with money and
more and will be able to

a word had been

to draw it out of a
rock.

Please by a
word show as much

as you can. That
looking for me

in my own way
we have been together

in the state of the
world in which we live

it has been a long time
I am going to show to

the world that we are
in a state of war

and we are in a state of
war with each other

and we are in a state of
war with the world

1877

Pine

the absolutely best

January 1892

13

W. L. G.

100

19

We have

1

三

1842

you will

1862

The Masbort-Historia
großmache

ग्रोटेमोरे

May 25, 1905 -

that when the machine the stroke being placed
were at the valves the of course the de-
voted water is better for use than as in 1870 and
then by some not proved. The for discharges.
I calculated for the various The two valves will
valves in and increasing pressure surely increase
the force necessary for them not get in
operation ~~the~~ found that by a stroke of less
than the water out of the $\frac{1}{2}$ of the
begin to operate by an $\frac{1}{2}$ for a large stroke
stroke of about $1\frac{1}{4}$. Their action will be
the smaller stroke they perfectly regular.
is not however as a whole. I feel sure that the
or at least irregular in action will work over
in their response. When so much better than before.

The Waldorf-Astoria
New York

May 25, 1901

Dear Mr. Schuyler,

I do not know
the meaning of the word
that you are using
in connection with the
defect in the
of the vessel. This has
to be corrected in the
next vessel, as we have
not.

You will find what

that when the surface
was dry the valves
would be closed by
the dry area ~~not~~ ^{not} present.
I calculated for the various
valves in each successive
the force necessary to
open them from their
closed position with only
a pressure of a
stroke of about 1 1/4.
For smaller strokes they
would become inactive
or at least irregular
in their response when

So

The stone seems full
The of course this is
but now it is not so
The per disappeared.
The new valves will
appear surely when
the oil gets in
by a hole in the
side of the
and for a longer stroke
their action will be
perfectly regular.

I feel sure that the
machine will work over
so much better than before.

As I understand the
matter so far as it
is absolutely to handle
in many is starting
a shipping in ~~the~~ the
united position.

① note but right the same
the ~~the~~ the ~~the~~ the
for ~~the~~ the ~~the~~ the.

We have not sufficient
enthusiasm as they are
Trusting you

Truly

Yr

NEW YORK CABLE ADDRESS "WALDORF," NEW YORK
PHILADELPHIA CABLE ADDRESS, "WALDORF," PHILADELPHIA



THE WALDORF
THE WALDORF-ASTORIA, NEW YORK.
HOTEL BELLEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
BULLITT BUILDING RESTAURANT,
PHILADELPHIA.
C. G. WOLDT, PROP.

The Waldorf-Astoria, Fifth Avenue, 370 and 380 Streets and Motor Car.



THE ASTORIA

New York May 27 1905

Mr. Schuff,

I have been buying the work
The steel-
wings for carbon have been ordered
in the compressor casing at the same
time. The
the in the compressor casing. The
the bottom of the casing will be changed
up like before. The
being in great hurry and it is very
defective. Everything about the compressor
will be over to make improvement and change
of the steel the part can be
the fitting of the piston is done. I
have bought several pieces of cast iron

[illegible]

NEW YORK CABLE ADDRESS "WALDOFF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "BOLDT, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
HOTEL BELLEVUE, PHILADELPHIA
THE STRATFORD, PHILADELPHIA
BULLITT BUILDING RESTAURANT,
PHILADELPHIA.

GEO. C. BOLDT. PROP.

The Waldorf-Astoria,

Fifth Avenue, 330 and 34th Streets
and Astor



THE ASTORIA

City of New York May 29 1900 ✓

Dear Mr. Schuyler
 I have received your letter of the 10th inst. and am
 glad to hear that you are well. I am
 also well and hope this letter finds you
 the same. I am sorry to hear that you
 are not well and hope you will soon
 be able to return to your home. I am
 very truly
 Yours
 J. Schuyler

[illegible]

The Waldorf-Astoria,
Fifth Avenue, 33rd and 34th Streets
and Astor Court,



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK
HOTEL BELLEVUE, PHILADELPHIA
THE STRATFORD, PHILADELPHIA,
BULLITT BUILDING RESTAURANT,
PHILADELPHIA.

GEO. C. BOLDT, Pres.



THE ASTORIA

New York June 7 1905

near the shaft

I wish you had
 given a chance
 to improve by the
 lead tape. As I believe that
 coming I have done
 but to make a
 better order
 and to make
 one of my
 in a shorter
 of my
 the bearing
 make better

It is necessary to see the piece
I am disappointed but I remain in
from you the evening I hope to learn
the cause of the trouble. I will go
to the bank to see the manager
and see if I can get the
money back. I am
not looking again. I am
of Thompson's house
at the Hickory Hill farm a day
of the past. The house was
the same as our house
except the big room which
was always a
hallway.

Our leaving for the big I have
had a number of improvements, one
in particular which is the big
I believe we had at the house
looking into the company
leaving at the house
I have been there since

NEW YORK CABLE ADDRESS "WALDO"
PHILADELPHIA CABLE ADDRESS "BOLDT"



The Waldorf-

Fifth Avenue, 110 and
and Motor Court.



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
HOTEL BELLEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
BULLITT BUILDING RESTAURANT,
PHILADELPHIA.
GEO. C. BOLDT, PROP.

THE ASTORIA

New York

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[Faint, mostly illegible handwritten text, likely bleed-through from the reverse side of the page.]

as I have been thinking of you
and your family very much lately
and I am sure you are all well
and happy. I am well and hope
this letter finds you the same.
I have been thinking of you
and your family very much lately
and I am sure you are all well
and happy. I am well and hope
this letter finds you the same.
I have been thinking of you
and your family very much lately
and I am sure you are all well
and happy. I am well and hope
this letter finds you the same.

One of the pleasures I have is a
letter from you. I have been
thinking of you and your family
very much lately. I am well and
hope this letter finds you the same.
I have been thinking of you
and your family very much lately
and I am sure you are all well
and happy. I am well and hope
this letter finds you the same.

The Nassdorf Astoria
New York.

June 10, 1930

Mr. J. H. ...

My dear Sir,

I have the pleasure to acknowledge the receipt of your letter of the 5th inst.

in relation to the matter of the ...

and your ...

and your ...

and your ...

I am, Sir, very respectfully,
Yours very truly,
J. H. ...

Enclosed for you are ...

and your ...

and your ...

and your ...

and your ...

and your ...

and your ...

The first thing I noticed when I stepped out of the car was the cold. It was a sharp contrast to the warm blanket I had been sitting under. I looked up at the sky, which was a pale, hazy blue. The air felt like a heavy blanket, and I shivered. I took a deep breath, trying to get used to the cold. The first few steps were a bit awkward, but as I walked, I began to feel the cold seeping into my bones. I was alone, and the silence was deafening. I had never felt so isolated before. The cold was a constant reminder of my solitude. I walked on, my feet sinking into the soft, cold ground. The air was crisp, and I could feel it on my face. I was alone, and the cold was my only companion. I walked on, my feet sinking into the soft, cold ground. The air was crisp, and I could feel it on my face. I was alone, and the cold was my only companion.

The Waldorf-Astoria
New York.

June 10, 1900

Dear Dr. Schmitt

My coming out to see you
has been a fine success and
I am very glad to hear of it.

As you have everything
thrust on me I am satisfied

being yesterday I took
a very early train to New

York and have been very

much pleased to see you and
your family. I am very

They had up to I am
of course. I am sure to tell
you. A number of my
interesting people are in the
the party.

The work has progressed
well but as I write before
the end of the week I
get the feeling that you
will be very busy. I am
I am having some trouble
with the first part of the
the subject of compression. I
The two sides of the
other values will be
Yr

[illegible]

Answered to the full
He and some of the
people were in the
cellar and a chief
brother was in the
kitchen room and the
woman, right in the
front of the house
and the other side
of the house was
far on either side
of the house.

Entered 1 Feb
The people on our part
giving no other look
in hand by the door
express

Back to the 50 that

The Waldorf-Astoria
New York.

~~Dear Sir,~~
~~I have the honor to acknowledge the receipt of your letter of the 11th inst.~~
~~and in reply to inform you that the same has been forwarded to the proper authorities for their consideration.~~
~~I am, Sir, very respectfully,~~
~~Yours very truly,~~
~~Wm. Waldorf-Astoria~~
~~President~~

The Waldorf-Astoria
New York.

Some where through which
the air can get in. If
he can not find a window
or door then a large

pipe leading up to the
roof or chimney and
on the ground. The com-
mon method is to dig
down to a window
the door can not be put.

I have known the person
responsible have the shape
of a piece of wood and
find it all right so that

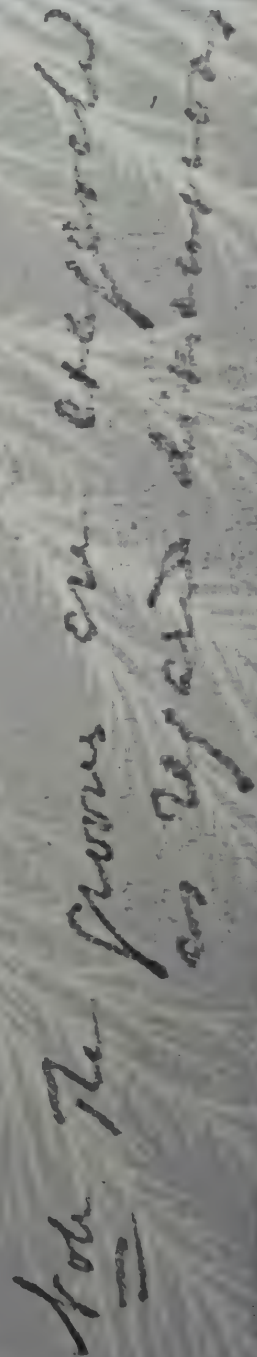
as my heart is now. The
perfect part of it, and
the same thing save
ourselves. The trouble of
proceeding blindly without
knowing how much we take
off. This is a good idea.

I can not see how we
can find following good results.

All we need is a long
stroke of pure power
to make the new system
work. We shall get it.

I am quite pleased in solving
the problem of saving the

21



shore, but I do not
 believe that as they are
 low they contribute much
 to the strength against
 heavy seas and therefore
 in the places where the
 waves are beaten, we
 have a great deal of
 damage done to the
 shore. The main body of
 the water is in the
 harbor, but a small
 reservoir, having an opening
 into the harbor, is

The Harbor of Victoria
 New York

June 11, 1850
 Dear Mr. Solomon,
 Respectfully I have the
 honor to acknowledge the
 receipt of your letter of
 the 10th inst. in relation
 to the harbor of Victoria.
 I have the honor to inform
 you that the harbor of
 Victoria is a fine harbor
 and is well adapted for
 the reception of ships of
 war and merchant vessels.
 The harbor is situated on
 the north side of the
 strait and is well
 protected from the winds
 of the south. The harbor
 is of great depth and
 is well adapted for the
 reception of ships of war
 and merchant vessels.
 I have the honor to inform
 you that the harbor of
 Victoria is a fine harbor
 and is well adapted for
 the reception of ships of
 war and merchant vessels.
 The harbor is situated on
 the north side of the
 strait and is well
 protected from the winds
 of the south. The harbor
 is of great depth and
 is well adapted for the
 reception of ships of war
 and merchant vessels.

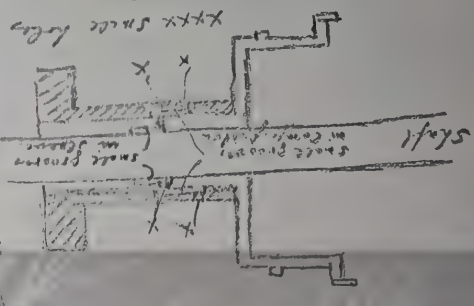
You will see that the
 harbor is a fine harbor
 and is well adapted for
 the reception of ships of
 war and merchant vessels.
 The harbor is situated on
 the north side of the
 strait and is well
 protected from the winds
 of the south. The harbor
 is of great depth and
 is well adapted for the
 reception of ships of war
 and merchant vessels.
 I have the honor to inform
 you that the harbor of
 Victoria is a fine harbor
 and is well adapted for
 the reception of ships of
 war and merchant vessels.
 The harbor is situated on
 the north side of the
 strait and is well
 protected from the winds
 of the south. The harbor
 is of great depth and
 is well adapted for the
 reception of ships of war
 and merchant vessels.

The Harbor of Victoria
 New York

I have the honor to inform
 you that the harbor of
 Victoria is a fine harbor
 and is well adapted for
 the reception of ships of
 war and merchant vessels.
 The harbor is situated on
 the north side of the
 strait and is well
 protected from the winds
 of the south. The harbor
 is of great depth and
 is well adapted for the
 reception of ships of war
 and merchant vessels.
 I have the honor to inform
 you that the harbor of
 Victoria is a fine harbor
 and is well adapted for
 the reception of ships of
 war and merchant vessels.
 The harbor is situated on
 the north side of the
 strait and is well
 protected from the winds
 of the south. The harbor
 is of great depth and
 is well adapted for the
 reception of ships of war
 and merchant vessels.

I have the honor to inform
 you that the harbor of
 Victoria is a fine harbor
 and is well adapted for
 the reception of ships of
 war and merchant vessels.
 The harbor is situated on
 the north side of the
 strait and is well
 protected from the winds
 of the south. The harbor
 is of great depth and
 is well adapted for the
 reception of ships of war
 and merchant vessels.
 I have the honor to inform
 you that the harbor of
 Victoria is a fine harbor
 and is well adapted for
 the reception of ships of
 war and merchant vessels.
 The harbor is situated on
 the north side of the
 strait and is well
 protected from the winds
 of the south. The harbor
 is of great depth and
 is well adapted for the
 reception of ships of war
 and merchant vessels.

I have the honor to inform
 you that the harbor of
 Victoria is a fine harbor
 and is well adapted for
 the reception of ships of
 war and merchant vessels.
 The harbor is situated on
 the north side of the
 strait and is well
 protected from the winds
 of the south. The harbor
 is of great depth and
 is well adapted for the
 reception of ships of war
 and merchant vessels.



The Harbor of Victoria
 New York

1/2

2 to near the "Stage" 4
 1000 ft. below the "Stage" 4
 1000 ft. below the "Stage" 4
 1000 ft. below the "Stage" 4
 1000 ft. below the "Stage" 4

The Waldorf Astoria
New York.

June 14, 1905-

My dear Mr. Schuyler,

I have just received a "Tower
of strength" by James
R. D. Lee, R. L. Lee, R. L. Lee,

which is a very fine
book. It is a very fine
book. It is a very fine
book.

I have just received a
book. It is a very fine
book. It is a very fine
book.

I have just received a
book. It is a very fine
book. It is a very fine
book.

I have just received a
book. It is a very fine
book. It is a very fine
book.

The Waldorf Astoria
New York.

The
The
... ..
the
... ..
is carried
... ..

L.C.

[illegible]

... as before
... I will come out of one
... I have been ... I have been ...
... by capturing ...

... very busy but

The Waldorf-Astoria
New York.

Reverend Mr. [illegible] [illegible]

[illegible]

[Faint, illegible handwriting]

U.S. 100, 100, 100

1. *Phyllanthus* *sp.*
 2. *Phyllanthus* *sp.*
 3. *Phyllanthus* *sp.*
 4. *Phyllanthus* *sp.*
 5. *Phyllanthus* *sp.*
 6. *Phyllanthus* *sp.*
 7. *Phyllanthus* *sp.*
 8. *Phyllanthus* *sp.*
 9. *Phyllanthus* *sp.*
 10. *Phyllanthus* *sp.*
 11. *Phyllanthus* *sp.*
 12. *Phyllanthus* *sp.*
 13. *Phyllanthus* *sp.*
 14. *Phyllanthus* *sp.*
 15. *Phyllanthus* *sp.*
 16. *Phyllanthus* *sp.*
 17. *Phyllanthus* *sp.*
 18. *Phyllanthus* *sp.*
 19. *Phyllanthus* *sp.*
 20. *Phyllanthus* *sp.*
 21. *Phyllanthus* *sp.*
 22. *Phyllanthus* *sp.*
 23. *Phyllanthus* *sp.*
 24. *Phyllanthus* *sp.*
 25. *Phyllanthus* *sp.*
 26. *Phyllanthus* *sp.*
 27. *Phyllanthus* *sp.*
 28. *Phyllanthus* *sp.*
 29. *Phyllanthus* *sp.*
 30. *Phyllanthus* *sp.*
 31. *Phyllanthus* *sp.*
 32. *Phyllanthus* *sp.*
 33. *Phyllanthus* *sp.*
 34. *Phyllanthus* *sp.*
 35. *Phyllanthus* *sp.*
 36. *Phyllanthus* *sp.*
 37. *Phyllanthus* *sp.*
 38. *Phyllanthus* *sp.*
 39. *Phyllanthus* *sp.*
 40. *Phyllanthus* *sp.*
 41. *Phyllanthus* *sp.*
 42. *Phyllanthus* *sp.*
 43. *Phyllanthus* *sp.*
 44. *Phyllanthus* *sp.*
 45. *Phyllanthus* *sp.*
 46. *Phyllanthus* *sp.*
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Referring to the above mentioned
and I am pleased to say that
the same is being done.

Dear Mother
 I have
 just a few lines

The image shows a document page with a grid-like structure, likely a ledger or a form. The text is extremely faint and illegible, appearing as dark, blurry marks against a light background. The layout suggests multiple columns and rows, but no specific data or labels can be discerned.

I am most pleased to hear
that you are well and happy.

We are very happy to hear
that you are well and happy.
I am most pleased to hear
that you are well and happy.
I am most pleased to hear
that you are well and happy.
I am most pleased to hear
that you are well and happy.
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that you are well and happy.

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I am most pleased to hear
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I am most pleased to hear
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I am most pleased to hear
that you are well and happy.

1770-1771



Handwritten notes in the upper right corner, including the word "Pine" and other illegible scribbles.

Small handwritten text, possibly a signature or date, located near the center of the plant illustration.

The Waldorf-Astoria
New York.

Dear Mr. Schuyler

I am very glad to hear

from you and hope the

weather is very pleasant

at present. I am very

kindly yours

Very truly yours

John D. Rockefeller

Mr. Schuyler

New York

at the same time, the
people of the country
have been so much
affected by the
war, that they
are unable to
do more than
survive.

It is a very
common thing
to see the
people of the
country in a
state of
anarchy.
The people
are so much
affected by the
war, that they
are unable to
do more than
survive.
The people
are so much
affected by the
war, that they
are unable to
do more than
survive.

[illegible]

My dear Mr. [unclear]
I have just received your letter of the 11th inst. and am
glad to hear that you are well. I am
at present in the city of [unclear] and
am engaged in the study of the
history of the [unclear] and
the [unclear] of the [unclear]
I am, Sir, very respectfully,
Your obedient servant,
[unclear]

for an edition of
Queens and I should
come to see.

That was the first time
I had ever seen you.

Trusting you will
be able to come.

on Oct 1st. I was
then looking for a
place in a vacant
house in the West.

he had been

in the West (11/11/11)
and
just before he left.

Wm. M. Hoffman
New York.

Nov. 23, 1911

my little of and one of the
Three little pigs, as we stop
for a moment a better night's sleep and
John! John in the house you find some
Buck find the Taffelberg, please
Geigens. I prefer everything on

I want that you that we can be
in the house. The other

to put yourself in
corner. I shall be happy to

for you. I am sure if I am away all
right of near. It is a matter of time

and I shall be there you will have
in the house.

Wm. M. L. Norton
New York.

3 1/2

My dear Sir,
I have just received your letter of the 1st inst. in relation to the safe. I am sorry to hear that the safe is not satisfactory. I will be glad to see it and make any necessary repairs. I will be glad to see it and make any necessary repairs. I will be glad to see it and make any necessary repairs.

my heart of love
for those who
have a better life
for! But in the
Rock of the Temple
Sieggen.

I am sure that you
will be prepared

and I am sure that you
will be prepared
fully to see me if I
sign of peace. I have
seen it in the things
in the world.

Let of the sun of the morning
These things are so not stop
In a better to the slope and
at the shore you find some
of the things damaged please
prepare everything so
that you shall be able to
move on the work
to your property
Cere. I shall telegraph
you if I am coming out
on the 27th. I should
like to see you at home

for me. The letter I should
mean. I hope I should
come to see you.

That was a very fine letter I
received. I am disappointed
in the result.

Hoping for better on this
the next time. I have sent
some of your letters to

Mr. T. C. C.

let it
be
be safe
from
the
to
for

The Waldorf-Astoria

Fifth Avenue 350 to 360, New York
and Motor Cars

New York, N.Y. 10017

Mr. Sch...

Dear Sir,

I have the honor to acknowledge the receipt of your letter of the 14th inst.

and in reply to inform you that the same has been forwarded to the proper authorities for their consideration.

I am, Sir, very respectfully,
Yours very truly,

Wm. Waldorf Astor

President of the Waldorf-Astoria Hotel

and of the Hotel Ansonia

and of the Hotel Hamilton

and of the Hotel Marlborough

and of the Hotel New York

and of the Hotel St. James

and of the Hotel Union

and of the Hotel Vanderbilt

and of the Hotel Waldorf-Astoria

The Wall of Victoria
New York.

My dear Mr. Wall,
I have just received your letter of the 10th inst. and am glad to hear that you are well. I am also well and hope this letter will find you the same. I have not much news to write at present, but I am sure you will be interested to hear from me. I am sure you will be interested to hear from me. I am sure you will be interested to hear from me.

Yours truly,
John Wall

The Waldorf-Astoria
New York.

Dear Sir,

I am writing you
by post to let you
know that I have
just received your
letter of the 10th inst.

and am glad to hear
that you are well.
I am also glad to hear
that you are
enjoying your
vacation.

[illegible]

Dear Sir
I have just received your letter of the 10th inst.

and am glad to hear that you are well and happy. I hope you will continue to be so for many years to come.

I am very much interested in the progress of your work and hope to hear from you again soon.

Yours very truly,
J. H. P.

P.S. I have the pleasure to inform you that your letter of the 10th inst. has been forwarded to the proper authorities for their consideration.

Very truly,
J. H. P.

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS. BOLDT, PHILADELPHIA.



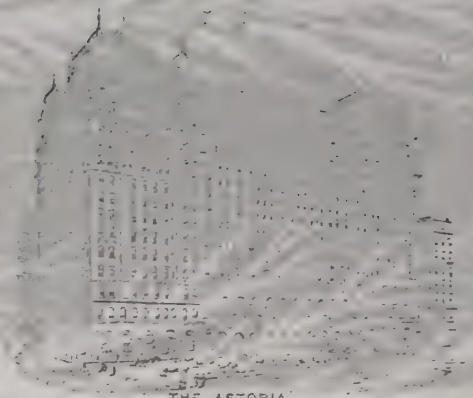
THE WALDORF

THE WALDORF-ASTORIA, NEW YORK
HOTEL BELLEVUE, PHILADELPHIA
THE STRATFORD, PHILADELPHIA
BULLITT BUILDING RESTAURANT,
PHILADELPHIA

CEO. C. BOLDT, PROP.

The Waldorf-Astoria,

Fifth Avenue, 33rd and 7-11th Streets
and Motor Court,



THE ASTORIA

New York July 2 1905

Dear Mr. Schell,

I wish as it is the case that
I may be able to come down to see you
I will go on this 1st of July
to see if it is possible to see you
in New York City
I have not yet had a chance to see you
the last time I saw you was some
I am hoping to see you at the
the family or rather the
others in some way or other you
any thing at all you can do
for me or even to say
you have changed your mind
that is all I want to hear

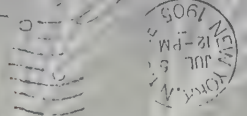
Handwritten text at the top edge of the page, possibly a title or header.

Handwritten text in the center of the page, appearing to be a list or a series of notes.

L. J.

Mandeville

Mr. George Thayer



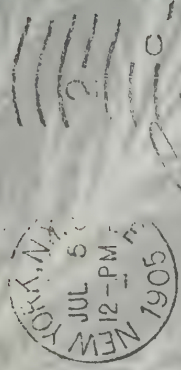
Wm. H. Wood & Son
New York.

62

was for the first time

in a very old house
I am of the opinion

oria



Mr. George
Scherff
Wardens Office
L.I.

The Waldorf-Astoria
New York.

July 5, 1907

Dear Mr. Schenck

I have received your
kind letter of the 2nd inst.
re: the ship. They will
offer the ship to the
British and will
be in the hands of the
British in the

NEW YORK
JUL 5 1907

22



are the D- looking

in a way that we

are a very strong

and are thinking

of the way we

are looking at

the world and

the people in

it. We are

beginning to

see things

in a new

light. We

are beginning

to see the



16 Dec 1881
My dear Mr. Brewster
I have just received
your letter of the 11th inst.
and am glad to hear
that you are well. I have
just received a letter from
Mr. L. H. Brown, Jr. of
Boston, who has just
returned from a trip to
Europe. He has been
very successful in his
travels and has secured
many valuable specimens.



Mr

W

Jan

1894

200

200

Wm. B. Alden & Son
New York.

Dear Mr. Alden,
I have the pleasure to acknowledge the receipt of your letter of the 10th inst. in relation to the purchase of a quantity of your goods. I have the honor to inform you that the same have been forwarded to you by express, and will reach you in a few days. I am, Sir, very respectfully,
Yours, &c.

The upper portion of the body was
filled with a substance of the same color as
the other and appeared to be double that
of the contents of the I have no doubt that
therefore, I have given you to be taken
into account. There is a great deal of
the same portion has well been taken care
as is evident above. There is perhaps no other
than center of oscillation, and to know is
but as for the upper or other - has
I am in doubt. The same does the portion
and the rest of the same
order shell of the upper and lower
as the upper compared the rest of

The Waldorf-Astoria
New York.

Jan 10 1900

Dear Mr. Schuch

I wrote you a
note in having the
drawing of the Peter

1. Feb. 1900

When you can
stop.

It is impossible to
be in New York.

the upper part of the A. is
killed and reference is
to each other and
to the center of the
chamber. The
the lower part of the
occurred above the
the center of the shell
but as the upper
I am in doubt. It
is the same as the
other side of the eye
at the top of the

He has been having a little trouble
with his lungs and is feeling
quite weak. I have no doubt that
if you take proper
care of him he will be
well soon. You will
I am to him of
you on the other side
He has had the
in each of his
eyes. I would like to
see him. He is not
well.

The following is a list
 of the names of the
 persons who have been
 admitted to the
 membership of the
 Society since the
 last meeting. The
 names are given in
 alphabetical order, as
 far as possible. The
 names of the persons
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July 1890

Dear Mr. [unclear]

I have just [unclear]
[unclear] [unclear] [unclear]
part of [unclear] [unclear]
[unclear] [unclear] [unclear]

I should like to [unclear]
[unclear] [unclear] [unclear]
[unclear] [unclear] [unclear]

I can [unclear] [unclear]
[unclear] [unclear] [unclear]
[unclear] [unclear] [unclear]
[unclear] [unclear] [unclear]

Very [unclear] [unclear]
[unclear] [unclear] [unclear]
[unclear] [unclear] [unclear]

... the ...
...
...
...

Do not ...
...
...
...
...
...

I am ...

I/ya can find some ...
...
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...

My dear Mr. [unclear]

I have just received your letter of the 10th inst.

and am glad to hear that you are well.

I am writing you a few lines to let you know

that I have received your letter of the 10th inst.

and am glad to hear that you are well.

I am writing you a few lines to let you know

that I have received your letter of the 10th inst.

and am glad to hear that you are well.

I am writing you a few lines to let you know

that I have received your letter of the 10th inst.

John. P. S. B. B. B. B.

22 October

Sham. Fls. — united by water

united for action

1891

5

1861

10

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10

! could be used in going to England - in London

For this copy - 3.00

1. *Chrysomelidae*
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1871

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July 11. 1860

April 28th 1906
Lester and I

20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 841. 842. 843. 844. 845. 846. 847. 848. 849. 850. 851. 852. 853. 854.

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[illegible]

1871

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The Malabar-Historia
New York.

Value of vegetation in the
place of development:

1) Vegetation in the
area of development
of difference of value
made by action value

3) Easy vegetation of
floating of the problems

by action value in the
place of development

The action of the action
value, that is, the action

of the action, the action

who you will see the
cap will be possibly

I shall be in the
place of development

the action of the action
value, that is, the action

of the action, the action

of the action, the action

of the action, the action

of the action, the action

of the action, the action

of the action, the action

The two front boxes will be if necessary
the compressed will be united as will connect
connected with caps in the early process R
this manner. The caps at X to follow the end
being broken the are and coming in through
from the compression jacket of a device it into
into the box in the compression jacket
through the water jacket into pump. These through the
the valves. The back valve into the cylinders

The boxes on the back will be from where it will be
found the water will be from where it will be
kept as they are as applied into the compressed
in each of them as the process in the
paper will be shown in, corner of the engine room.
all these four pipes, advantages of very positive

without the engine

One for the old tub

big difference in the
making of the tub and
I ought not to have any
difficulty in immediately
having the tub and engine
and all of things put in

the tub. I am sure
with the engine for 3 or
also a good will on
the company. The engine
fighting with the tub. I am
of I can beat the tub. I am
a tub. I am sure

The Massachusetts
New York.

to put in the
how serious is the
will have the
we may put in
backing tub. The
and the best. I thought

is not in
we do not care
a tub. I am sure
could get in. The
could have
the engine. The
the engine. The

I think the course of the
scholarship is a
better holding of the
saction value for you
will be that when
a really big man
is opening
in the world
closing they will have
aid each other
all in steps from
a strong value
will help to give the
the value of the
to an even greater.

Office of the
Registrar

Jan 2

Dear Sir,

I have the honor to acknowledge the receipt of your letter of the 28th inst.

in relation to the application for a license to practice law in this State.

I am sorry to hear that you are unable to attend to your business at present.

I am, however, glad to hear that you are recovering from your illness.

I am, Sir, very respectfully,
Your obedient servant,
J. H. [Signature]

Enclosed for you are the papers in relation to the application for a license to practice law in this State.

I am, Sir, very respectfully,
Your obedient servant,
J. H. [Signature]

I am, Sir, very respectfully,
Your obedient servant,
J. H. [Signature]

I am, Sir, very respectfully,
Your obedient servant,
J. H. [Signature]

I am, Sir, very respectfully,
Your obedient servant,
J. H. [Signature]

I am, Sir, very respectfully,
Your obedient servant,
J. H. [Signature]

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2

from what appears to be the
of the experience to be
as to what it would be
on that end. It would
perhaps be better to
and while I am not, to
for if we can measure what
to get

if everything

I shall know

for now. The
not immediately
got right from
troublesome
perhaps that is
it would
be a good thing
to make a little

What a
of course a
reached

I do as
the evening
I was up
the night

and the
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the night

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the night
the night

The Waldorf Astoria
New York.

July 1. 1901

Dear Dr. Schenck,

Please

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the

from it happened which has to stand
the whole of the capital about the

pieces have been, since the the

Have not everything in the hands
of a few, but I expect

I shall have the whole of the

the things, now which will be

the best way off the for a good
an balance. The whole will

leaving it the whole changes

things we cannot the whole can

which for and which get a

The Waldorf-Astoria
New York.

July 7, 1901

Dear Dr. Scherff,

Please have the
book sent to me
immediately to compare
with the one up to
which I have
They must be at
least as good as
the old one
Yours truly
John G. Lane

found it impossible
to understand the
pieces however, and
Have not anything
left off a friend
I shall leave it
to the hands of some
other person
at present. The
leaving off the
days he came
back the solution

which has to stand
a great strain

richer . . . As the

iron will be

hollow I expect

the iron will be

stiff & will be

safe for a good

while. As the same

little change in

the shaft I can

get a larger

about 10 feet from
of course being
reached.

I do not know what
the reason is. I
think of the ship
the night
before. The ship
would have been
all right.

Have some prospects. The
for the day. In the hope of
reaching the
line.

The Waldorf-Astoria
New York.

Dear Sir,

I have the honor

to acknowledge

the receipt of

your letter of the 2nd inst.

in relation to the

above mentioned

and have been

pleased to hear

of your success

in the matter.

I am, Sir, very

For the first time
at the house of the
in the house of the
perhaps the first time
and with I think
if we are never
of anything

The year is over I shall have
not a single day
I thought I had
to do with the
the year is over
the year is over

[illegible]

I shall have to take
the pleasure very soon
to leave for Italy. I
am sure you will find
the time as I have
been. I shall be
with you very soon.

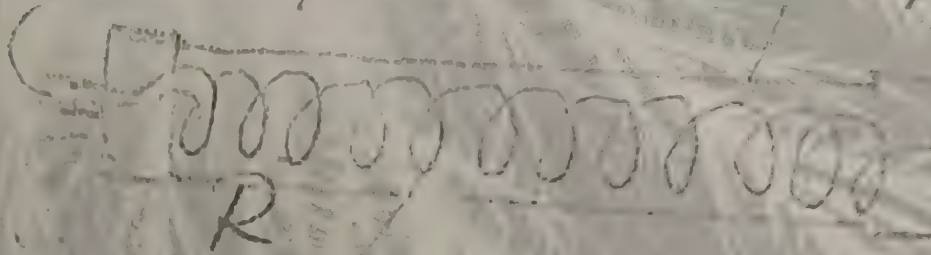
The Waldorf-Astoria
New York.

Dear Mr. Schuyler,

I have been thinking of
writing you for some time
but have been so busy that I
could not find time.

I am very glad to hear
from you and hope you are
well. I am well and hope
you are the same. I am
very glad to hear from you
and hope you are well.

And then I went to the
factory and looking at the
books. The books are
what for water. I hope



Could be used for the
In this way as you see
we can work much more
efficiently. I am satisfied
that we should feel if
we follow up the scheme
as originally intended. The

valves, important in the
plan of development:

1) greater length of the
valve for the

2) suppression of noise
made by suction valves

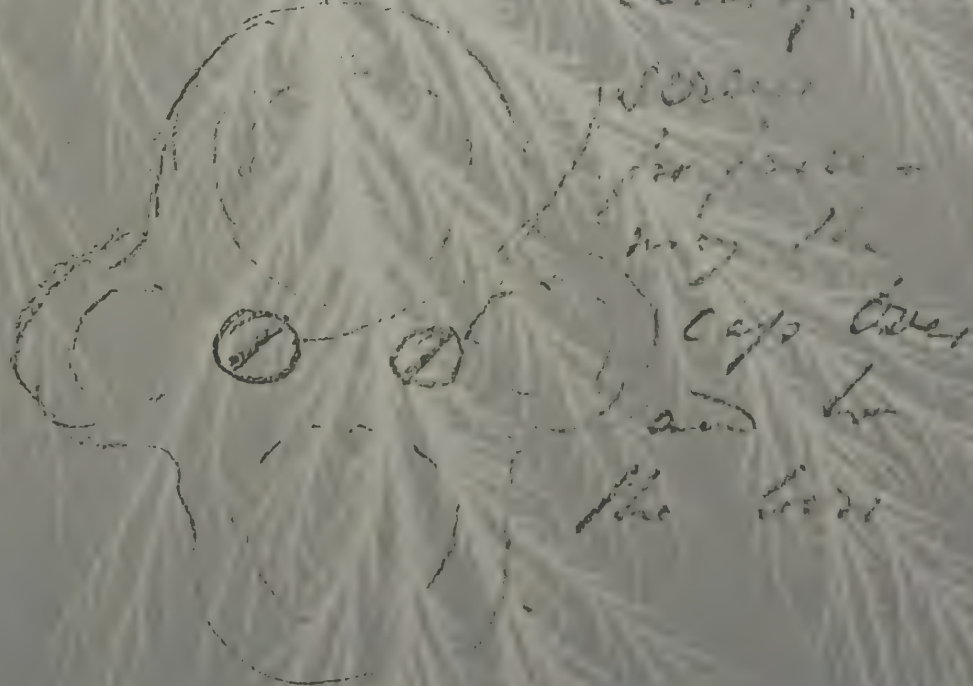
3) Easy regulation of
floating of the pistons

By adjustment of the
length of the valve, the
the holes of the suction
valves, thereby allowing on
top of them the suction
of the water.

As you will see the
cap will be practically

The Waldorf-Astoria New York.

I shall be a small
pocket watch
the the which will be
hollow and screws with
the screws over the
watch and the watch
like the brown leather
casing.



The two front bones of
the compound eye have
grows into caps on
the bones. The caps
being broken the air
from the compound eye
is let out. The
change in the bones and
the valves.

The bones on the back
found the water will be from
left as they are as
in each of them in
pipe side in water in
all these four pipes.

will be if necessary
and will connect
in the Corby River at R
at X to take the cut
and coming in through
the old channel of the
the original channel
from the through the
valley into the cylinder
be from where it will be
as ejected into the compressed
air reservoir in the
corner of the engine room.
Advantages of very practical

[illegible]

The Walcott-Historia
New York.

and a further by such
but how serious a
cater will have the any
day. We may put a
thin jacket between the
top and the base. They
are in not
we do not know
a little air for the
only the top in. It
will cool the
with the one that
from the bottom. R

The Walcott-Victoria
New York.

and a fine by such
but how serious as in
acted will have the any
day. We may put in
them packing between the
and the box they
can in not
we do not care of
a little oil for the
outside get in. It
will cool them during
with the sun heat come.
from the sun. R

I have the entire De
scribing sheet in the
better looking of the
Sachin notes for you
will find that the
one with a long line
at the bottom is empty
in some cases and is
Closing. They will then
all be taken after. If a
little bit sweeps from
the closing note at
the top to give the
the note for the
the one in the middle.

In the present times
there are holes, from
 $\frac{1}{2}$ " paper-tipped, he
can drill them out
and make them as
large as we can be

provided larger section
for this subject of ship

This is not much of
a job. All this work

can be done in

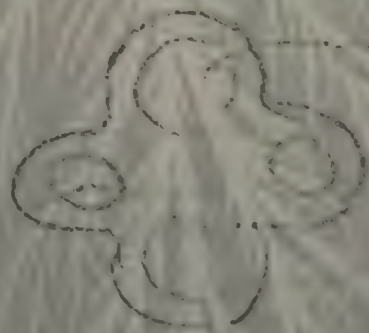
the present for the reason

since we can put

the equipment in place

to which the present
This is a paper of
the late afternoon
expressions as you have
the that I want of
as to send me a
picture of this film
as much showing the
relation of the law
in the Congressmen
the Indian acts, are
beed. It will be
like the

web. holes



web.
1.0,

I sh

1890



Line

My dear Mr. May

I have

just

AB

Handwritten text, possibly a name or address, partially obscured by the pattern.

Handwritten text, possibly a name or address, partially obscured by the pattern.

1891
1892
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1908
1909
1910



The Elkhorn & Des Moines
New York.

Dear Mr. Editor,

I am in school.

There is a story

which you may find

in my paper on that

they can be used

in the paper upon the

very much. It is

very beautiful.

Can you send me

some more of the

after I passed
that little bit of
the way I found
the things I had
left in the car
and you can see
back a mistake.
-hope you will enjoy
the trip
and I hope you will
reach home & soon
happy, Love, Mary

My dear
Mary
I hope you
will enjoy
the trip
and I hope
you will
reach home
& soon
happy, Love,
Mary

The Waldorf-Astoria
New York.

July 20, 1901

Dear Mr. Schuyler

There is a short
advertisement in the
N. Y. Times in which
they come out in the
face of upon the
very face. It is
very circulated. I
can not remember the
date but it is

Kindly after I present
my first letter to the
Board will inform the
the following, will you
please mail it to
the one recipient of
this. You can send
when a mistake.

Hope you will enjoy
yourself while in
the Jefferson, also the
the best to stay with
and peace & comfort
during your stay.

P. S. - I have been thinking
 of you a great deal lately
 and hope you are well
 and happy. I am well
 and hope you are the same.



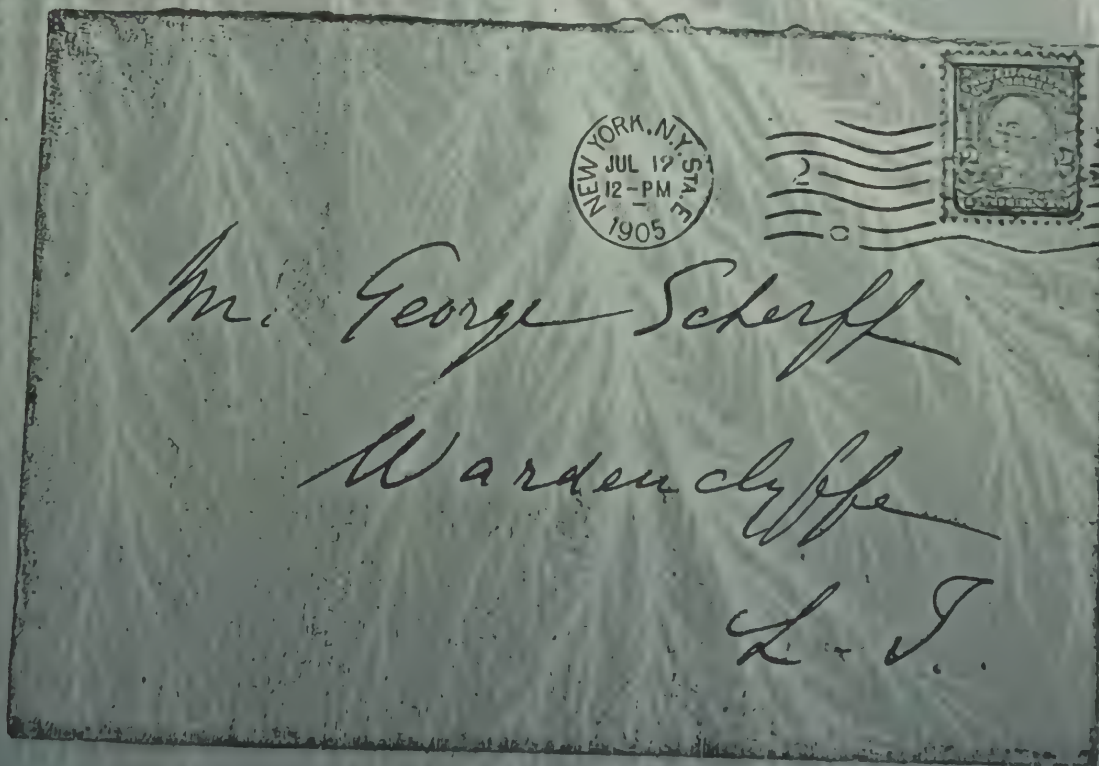
from the L. vol. No.
 of the London is to
 send my Mother
 published in "Indus-
 trialism". I am
 afraid it will go
 up in a second, I
 at home. I would be
 very sorry. I am ex-
 tremely valuable. In two
 or three years it would
 bring a fortune.
 Will let you know when
 I am coming.
 Sincerely
 George Scherff

The Waldorf-Astoria
 New York.

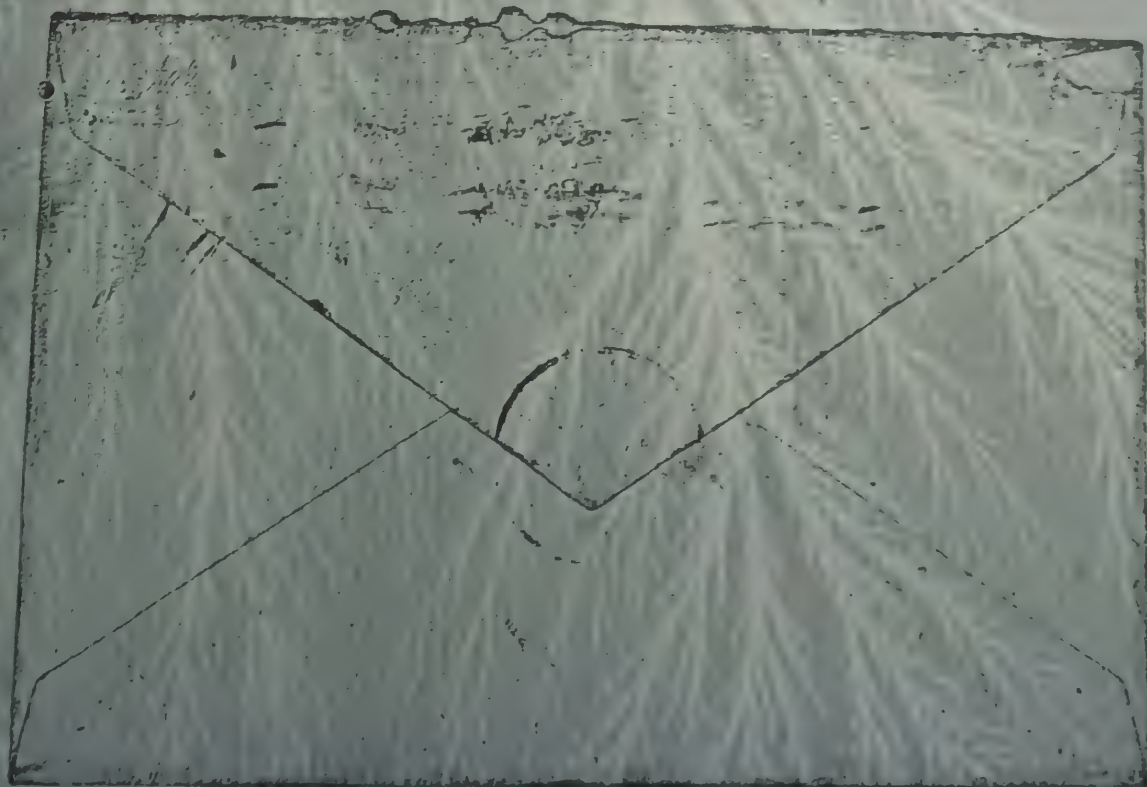
July 12 1901.

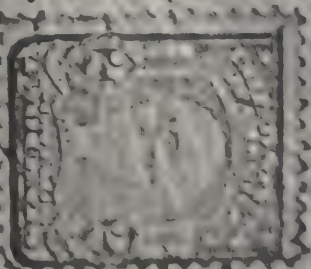
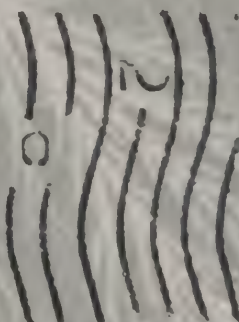
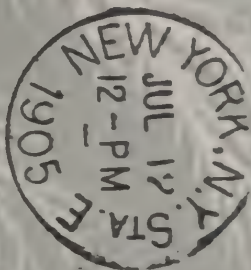
Dear Mr. Scherff,

As I have already let
 you in a previous letter
 mailed this morning, the
 work will not be finished
 before Saturday. At best
 I can begin to take the
 part out on the after-
 noon train. I shall be
 in capital by Friday
 evening. I would come



Saturday morning.
The letter when I saw him for the second
to day did not seem if he does not make
to him the slightest doubt his present promise.
doubt about planning. Please him, all in
a week's interest. So yesterday I had an
word so that he can make the best
and in a week, then as quickly as possible.
his party will return to the city, he would I am expecting exact
send me the check, best results and I
I believe that in can scarcely tell you
the future he will how badly I need them.
from a reliable person. Before I come out
I have a number of





Mr. George Schuyler

Walden City Pa

2-8

The Waldorf-Astoria
New York.

July 12 1901.

Dear Mr. Schull,

As I have already told
you in a previous letter
I received this morning the
news that we have finished
before Saturday. Most
I can leave for the
first out on the after-
noon train. I should all
be ready by Friday
evening I would arrive

Saturday morning.

The school when I saw

the day school and seen

to have the stippled

about about pleasing

a small interior, so

much for the be

and in week, the

the very well return

the city, the would

about the cheer,

I believe that in

the future he will

from a vehicle

may
can
seen
last
may
So
can
as
I
last
can
how
Before
I
I have a number of

him for the evening
if he does not make
his present promise.
Please have all in
readiness so that we
can make the best
as quickly as possible.
I am expecting ex-
cellent results and I
can scarcely tell you
how badly I need them.
Before I am out
I have a number of

problem to solve. Part
of the burden is to
be met by British
subsidies on "Indian
education". I am
afraid it will grow
up in a short time, if
not done. I would be
very sorry. It is ex-
tremely valuable. I have
a three years old son
being a fortune.
Will let you know when
I am coming.
Sincerely at Test

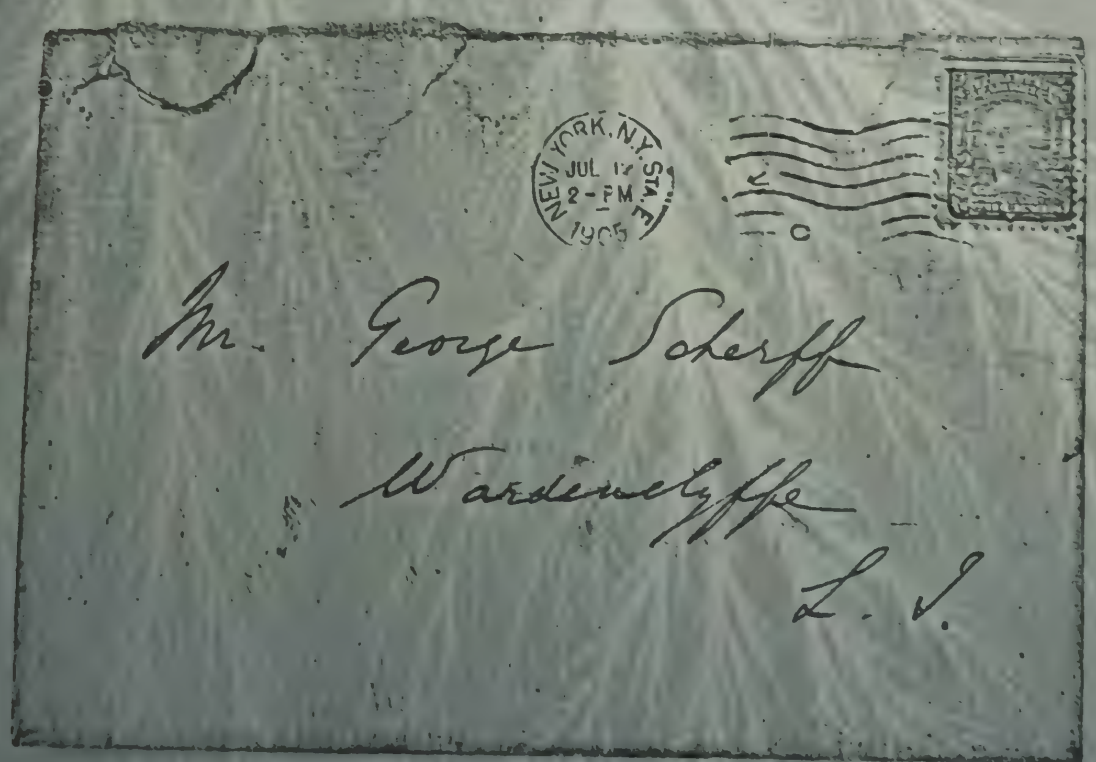


out/standing people I am
 but he got me to morning
 Have you succeeded in getting
 somebody to cut the
 grass? What about the
 kitchen? What? On
 the top of all my troubles
 here there of the Dunlop
 available nights added
 to what I could find
 about coal
 Do not forget the wood
 which will enable us to
 make a good deal
 The Selma matter is progressing
 he may be able to place an
 interest some thing nothing but
 developed as yet. Success at the

P.S. I don't think that
 I can get a person to cut
 The Waldorf-Astoria
 New York.

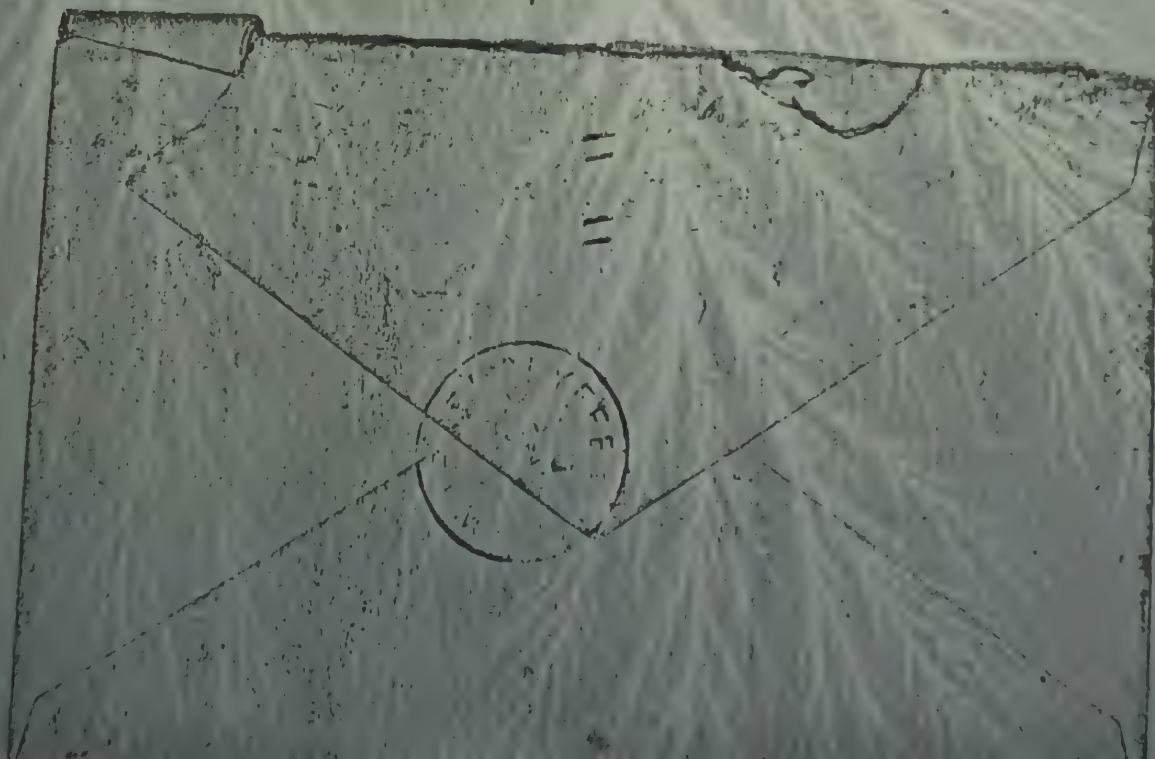
July 12 1900

Dear Mr. Scherff,
 Note of your letter
 have been received and
 are welcome. I am
 glad you have been able
 to come to a decision
 by not outcading me
 R. P. I. matter. As to
 the coal supply we are
 out doing the Abderites



There seems to be nothing else left. You are doing well. Your journey contracts the same people here. I

The dearest piece is an effort we can not finish yesterday and we expect to be there again and the drop in the cushion before Saturday. As I kept. But it will soon as everything is like more time to finish. I shall come all the I thought of one. There is surely first. The valves are an advantage to be being fixed by another second by my army men but more than one sooner but an has could not be an account of the contract kept on account of matches with the



I am
morning

P.S.

I do not think that

I can get a person from

the S. J. R.R. Co.

Now watch out

the 3rd one.

The Waldorf-Astoria

New York.

It seems to be pictures sent.

July 12, 1901,

Dear Mr. Scherff,

Both of your letters
have been received and

are welcome. I am

glad you have been able

to come to a decision

by understanding me

in P. 9 letter. As to

the coal supply we are

out during the absence

Then seems to be
nothing else left. You
are doing well.

The dearest piece is
finished yesterday and we
are now at the cushion before
and the drop in the
sheet. But it will soon
take more time to finish than
ever than I thought at
first. The valves are
being fixed by another
man but more than
two could not have been
fixed on account of

to be in joining contracts the
You have people here. I
am afraid we can not
ice to expect to be the
and we must be together again
certain before Saturday. As
in the future everything is
well from as everything is
to find friends I shall come
all at once. There is scarcely
an advantage to be
another secured by my coming
there out sooner but on
account of the contract
watch with the

one finding people I say p.s.
how to get one to-morrow. I do not
I can see

Have you succeeded in getting
somebody to cut the

grass? What about the
Riverside matter? Oh

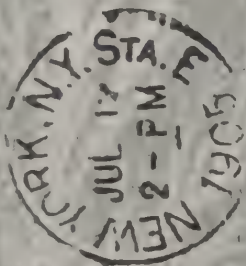
the top of all my troubles. Now
there are of kind and type here

are like weights added here

to what I cannot put
about carry that y

Do not forget the wood
which will enable us to buy
make a good deal. R. P.

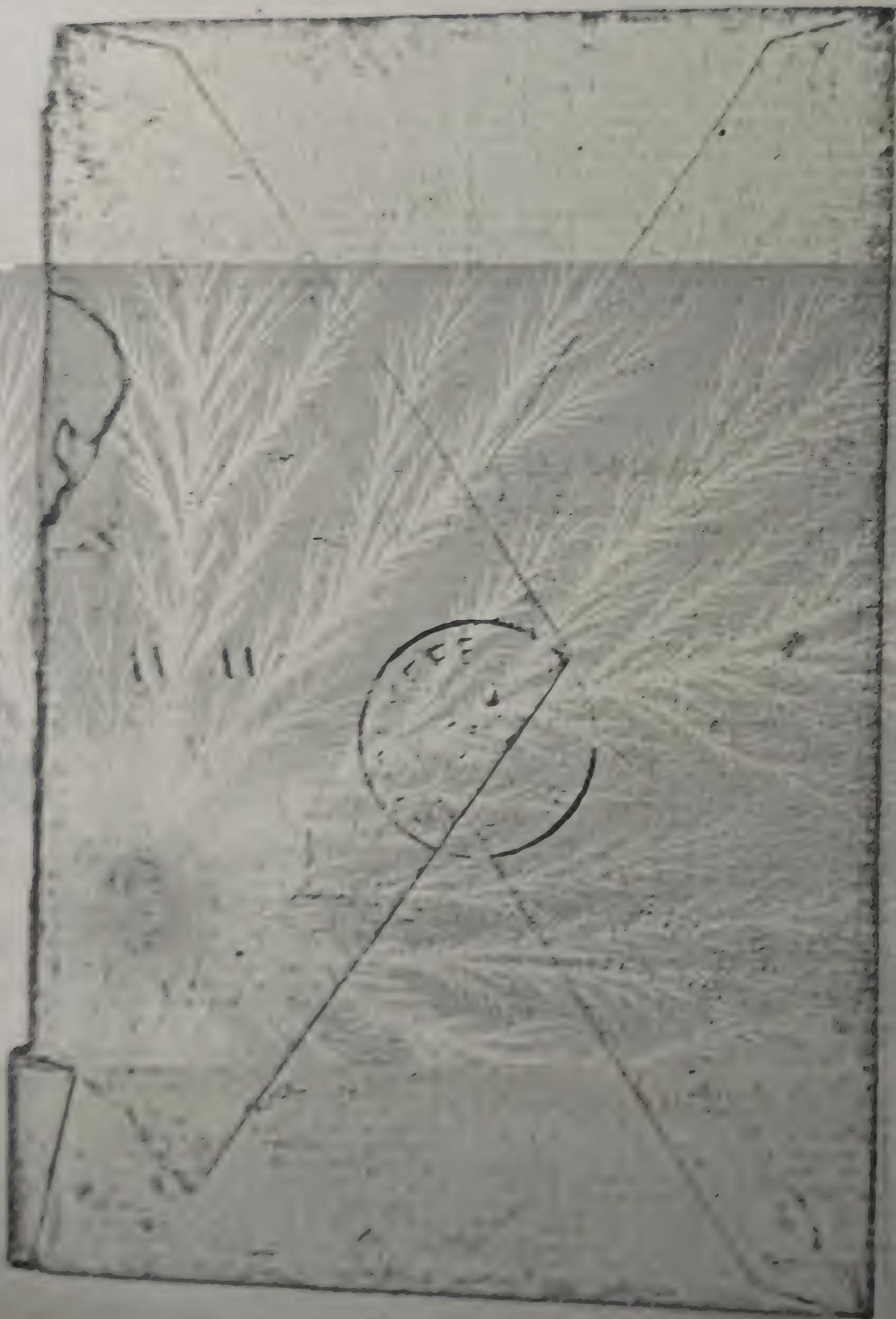
The School matter is progressing.
It may be said to place on the coast
and in the town though nothing has not been
developed as yet. Success at Tuck



Mr. George Sokerff

Wardensville

W. Va.



NEW YORK CABLE ADDRESS "WALDORF NEW YORK"
PHILADELPHIA CABLE ADDRESS "BOLDT PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK
HOTEL BELLEVUE, PHILADELPHIA
THE STRATFORD, PHILADELPHIA
BULLITT BUILDING RESTAURANT,
PHILADELPHIA
GEO. C. BOLDT, PROP.

The Waldorf-Astoria.

Fifth Avenue, 33rd and 34th Streets
and Astor Court,



THE ASTORIA

New York July 20 1915

Dear Mr. Schaff,

The valves have just been delivered
and as I expect to come out to-
morrow to return the day following.
I have ordered 8 extra steel washers, with
a little thicker bottom plate as one
of the last was broken. These will be
furnished as soon as possible. In the
new valves the improvements I explained
to you have been carried out and a
pin has been put through each cap to
prevent accidents of the kind we have
had in the before and happen again.
The action of the new steel washers seems

to be very sure and I hope for much
much better than the last obtained.
Your letter which I am justifying, I am
already beginning to feel the something last
taken place and of course I expected the worst.

I will tell you shortly that it looks
better for this week than under the same
and his promise for the 22^d. I
have several chances and may have but
I have been observing in others that I
am now to pass through. Just as some
times as the situation is in a favorable
form my situation will soon up. I
am just now that the result of them
last last will be quite satisfactory and
the situation much better.

Sincerely

W. T. C.

scribble mentions that it
works well. It will not
be necessary to stop any
later. I must prefer to
start a little earlier on
Sunday and keep the machine
running with about 80 lbs.
later we can revise the
pressure and speed as
we find possible.
I anticipated this letter
will reach you at
noon to-morrow, so you
will have ample time
to prepare.

Sincerely,
A. T. Clark

Sunday 21. 1905.

Dear Mr. Schmitt,

I saw Mr. Loh today
and he informs me as
concerning the interest of
which I spoke to you
already previously. That is
to say he expects it as
a fact that his friends
do not he says without
a question. This you can
well hope the card sent

With the relation we have about now. There
is naturally no information, but we shall write the matter.
This however is not by any means reliable as I write
my correspondence. I have already, as I said like
concepts with the others. I have seen in the notes
for his coming on Sunday, in place of the 15 which
I shall myself be there on his death and they
L-nore, Saturday evening, I have been shown how
it is impossible for us to meet in the last case,
to leave in the morning. Please have please at
my end be too long to receive when the train
explains in a letter. But arrives. We have not
one reason I need them. much to do as after
him as that is that there is a little bit we can
that we have not be delivered that the measure and

MS

July 21. 1905.

Dear Mr. Schuff,

I saw Dr. Loh today
and he surprised me as
considering the interest of
what I spoke to you
already placed. That is
to say he accepts it as
a fact that his friends will
do what he says without
a question. This gives him
much love and cordial

but the selection will
be materially improved.
This however is not my
only expectation. I have
conferred with the Indians
for his coming on Sunday. I
shall myself be there
to-morrow, Saturday evening.
It is impracticable for me
to come in the morning. Pr
My word has been too long to
explain in a letter. But as
one reason I need mention
and that is that the new
steel weather will be delivered

to be about noon. There
has been, will be much
more reliable as I wrote
already, as I don't like
to leave them in the valley
in place of the old which
are to be made at they
have been shown how
much in the last hour.
Please have them at
seven when the train
arrives. We have not
much to do at after
a little bit we can
start the machine and

scribing ourselves that it
works well. It will be
be necessary to stay up
late. I would prefer to
start a little earlier on
Monday and keep the machine
running with about 80 lbs.
later we can raise the

~~pressure~~ ~~and~~ ~~lighten~~
we find possible.

I anticipate this letter
will reach you at
noon tomorrow, so you
will have ample time
to prepare.

Sincerely,
A. T. C.

NEW YORK CABLE ADDRESS "WALDORF NEW YORK"
 PHILADELPHIA CABLE ADDRESS "WALDORF PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK
 THE BELLEVUE-STRATFORD, PHILADELPHIA



THE BELLEVUE-STRATFORD



THE ASTORIA

The Waldorf-Astoria.

Dear Mr. Schaff,

New York, July 21 1915

I had prepared to leave the hotel this morning but in the last moment several reasons prevented it I decided but it was too late to go to the office today and come on tomorrow. Mr. Andrews I regret will be home Sunday.

In the first place I wanted to leave the hotel with me as I am afraid that the last ones have been very much frightened on account of the caps and are staying home. I shall see of the business and business. The new ones

will be even so much safer than you
thought that in the event we do not
get some work we might get along with
the work of construction by making an
short last business evening at the starting
again at say 10 A.M. Tuesday.

I was in mind to telegraph change of
plan this morning but I thought that
even if you propose in the first place
to examine work you probably would not
start the first, as steam can have
been in the ground of an hour. However
you may begin then you might fill the
holes and run the pump down by
working the pump as filling the leaks.
If I can do any promising work today is
by the afternoon for this week as Saturday
evening leave town. I am starting
early and will be home.

Sincerely

H. T. Cook

A. H. THURSTON
MANAGER



Astor House

BROADWAY, BARCLAY & VESEY STS.

New York July 24 1905

Dear Mr. Schuff,

I stopped here - my old residence -
to write a few words which might
go off with the 4 P.M. train.

I just saw Mr. S. and he repeated
what he already said twice, that
he would place an interest. He
will see his friend who is a
young man at 9 P.M. and
expects to arrange matters by
to-morrow. I shall certainly be
disappointed if his expectations are
not realized.

Would like much to know how
the selves have behaved. As you
will remember 2, 3, 6, and 7. Then
the old schoolmaster will see
if there should be trouble.

ought to be on there and
rather on the velvet, but I
then on the others because of
the plaster stroke. The new we-
sters have been finished this
morning and on my next trip
I shall bring them out.

I hope that to-morrow will bring
something new and encouraging.
Also that you will be satisfied
for my young ones are so
important just now.

Mr. Andrews has not yet made
connections with his friends, must
be my disappointment. They are
out of town to-day. He will
send out some pigeons for direct
connections to the boats, also a
trap. He thinks we feed nothing
but water with the sugar, will
dry steam it will work much
better.

I believe now that the
most satisfactory and practical
way would be to use the



Astor House

BROADWAY, BARCLAY & VESEY STS.

New York

all Great Connections and make
expensive joints or some flexible
Connections. Now Please send
the two brass connections with all
nuts and washers to receive a
receipt of them. I shall have them
fixed up and also provide for
regulation so that the piston
will operate properly without
that disagreeable creak. The old
connections were finished with
rough mach better and smoother
also the drive will be deadened.
I may perhaps make something
which will screw on the
suction opening on the
bottom so as to fill
the air and let the same

line reduce the strain on the
the machine valves. The line
made by them is the principal
nuisance. They have $\frac{1}{16}$ " stroke
whereas the compression valves operate
only $\frac{1}{32}$ ".

We must do everything possible to
get the machine in perfect
shape. It seems that not much
is needed now. Of course
if something goes very wrong
the strain there will be delay
and trouble. I hope the parts
will submit to the rough treat-
ment for a while. Yesterday I
never found on the steam pipe
except very little strain it had
fallen below the level. I tell you
frankly I was afraid the upper
new casting would fall on
the bed plate. The vibration seems
to me too intense and I don't
not want to risk it and I hope
that part will move. Will full
steam it would have had to stand about
4 lines or more. Sincerely
J. T. Taylor



A. H. THURSTON
MANAGER

Astor House

BROADWAY, BARCLAY & VESEY STS.

New York July 24 1900

Dear Mr. Schuff,

I stopped here - my old residence -
to write a few words which might
go off with the 4 P.M. train.

I just saw Mr. S. and he repeated
what he already said before, that
he would place an address. He
will see his friend who is a
young man at 9 P.M. and
expects him to arrange matters by
tomorrow. I shall certainly be
disappointed if his expectations are
not realized.

Would like much to know how
the rebels have behaved. As you
will remember 2, 3, 6, and 7 have
the old celebration will be 100.
If there should be trouble in it.

ought to be on them and
rather on the value. God
then on the other because of
the greater stock. There were
others here but I prefer this
morning and on my next trip
I shall bring them out.

I hope that tomorrow we bring
something new and encouraging
also that you will be patient
for as your smaller endeavors
important as just now.

Mr. Andrews has not yet made
connections with his friends. Much
to my disappointment they are
out of town to-day. He will
send out some paper for direct
connections to the boiler, also a
trap. He thinks we feed nothing
but water with the engine, will
dry steam it will work much
better.

I believe now that the
most satisfactory as practical
way would be to use the



Astor House

BROADWAY, BARCLAY & VESEY STS.

New York

old brass connections and make
expandable joints or some flexible
connections. Note Please send
the two brass connections with all
nuts and washers to Pease on
receipt of this. I shall have them
fixed up to also provide for
regulation so that the piston
will be able to operate without
that disagreeable creak. The old
connections when finished will
look much better and stronger
also the noise will be deadened.
I may perhaps make something
which will screw on the
suction opening on the
bottom so as to fill
the air and let the same

Will reduce the valve, mostly
the suction valve. The valve
made by them is the principal
noise. They have $\frac{1}{16}$ " stroke
whereas the compression valve stroke
only $\frac{1}{32}$ "

We must do everything possible to
get the machine in perfect
shape. It seems that not much
is needed now. Only, of course
if something goes very under
the steam there will be delay
and trouble. I hope the parts
will submit to the rough treat-
ment for a while. Yesterday I
never heard on the steam pipe
except very late when it had
fallen below zero. I tell you
frankly I was afraid the upper
part of the engine was going on
the bad place. The vibration seems
to me too intense and I don't
not want to risk it and show
that part much more. Will full
steam it would have had been about
by 4:15 or 4:30. Sincerely
J. T. Taylor

THE WALDORF-ASTORIA

Fifth Avenue, 7th and 14th Streets
and West Court.

THE WALDORF

THE WALDORF-ASTORIA CO. 1900
HOTEL, RESTAURANT, BAR, AND
THE STANFORD BUILDING, 100
BULLY BUILDING RESTAURANT
NEW YORK

ED. C. GOLD, Prop.

New York July 24 1905

Dear Mr. Scherff,

I returned last night with
not fairly developed in the New
York atmosphere as finding several
troubles waiting in my room. The
prolonged correspondence.
This morning again my thoughts are
centered on a pleasing matter as
I am enabled to write you fully as
I expected for the guidance of the
finger that is to take the matter
to Colorado Springs in charge. Besides
something very desirable today which
might materially advance the cause

efforts. I hope it will be
you will hear from me as soon
as possible, or rather you will
see me there. I am very eager
to get this meeting in better
position and need for this it will
not be difficult as the first part.
The introduction was very much impressed
with the great progress I have made
and is fully convinced that the
movement has great possibilities
He is going to begin work to day
and perhaps he may come to
my residence soon. At any rate
I feel that he may be depended
upon as an enthusiastic supporter
of the movement or rather movement
which the Free Mission Co. is to
undertake.
Sincerely,
Wm. W. Phelps
Get all the word and what you feel
to send - "I fear means if you can".

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "BOLDT, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
HOTEL BELLEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
WOLFE BUILDING RESTAURANT,
PHILADELPHIA.
CED. C. BOLDT, PROP.

The Waldorf-Astoria,

Fifth Avenue, 370 and 34th Streets
and Astor Court,



THE ASTORIA

New York July 24 1905

Dear Mr. Scherff,

I wrote to-day from down town
expecting that my letter would reach
you with this evening train. The
most important thing was to express
the two large Coon Connections will
all supplies & nuts to Peace.
Please do this without delay so
that we may have them abundant as
I propose. The machine will then
make a much better impression.
I have a scheme to hire the house
of the section volunteers by a little

attached to the inlet of the
large brass valve at foot 1.

With studies to I have agreed
that the best way to get rid of
the horn of the exhaust valve is
to make a hole in the chimney
above the roof. Peter is an ex-
pert on such work I suggested
he might show that he must take
out a full brick. This will be
a hole of about $2\frac{1}{2}" \times 8"$ $\begin{array}{c} \text{8"} \\ \text{2 1/2"} \end{array}$
This will permit to stick the pipe
in at an elbow on the end though
the hole at then turn the elbow
so that the stream of the exhaust
will shoot out upwards. Perhaps
a short nipple can be screwed into
the elbow, say, 4" long. Please see
what can be done about this.

P.S.

I forgot to tell you that Sincerely
Mr. Andrews is very enthusiastic, but of course
what has impressed him more than the engine was Mr. Scherff's pipe

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "BOLDT, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
HOTEL BELLEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
BULLITT BUILDING RESTAURANT, PHILADELPHIA.
GEO. C. BOLDT, PROP.

The Waldorf-Astoria,
Fifth Avenue, 33rd and 34th Streets
and Astor Court.



THE ASTORIA

New York July 25 1905

Dear Mr. Schuff,

Was appointed and to find a
note from you this evening.

Saw Mr. S. this afternoon. He
said his friend was delayed and
will return only to-morrow. Thinks
he will plan to leave. Also said
in passing that perhaps he may
take it himself. I believe that
he will be a valuable man for me.

I also note proposition for
an ad campaign of some who

[illegible]

To-day I have a business
call on my father-in-law. ~~For the first time~~
for the day for the first time I may
manage to get out.

One friend I. P. said to a woman
 the following report. I do not know
 whether I can expect much after
 that week's treatment. I shall
 I like to have him here in
 there home.

The other land would have
been his had yesterday
been to the point I was
holding for him. My
other chance of which I
wrote in good time in
1802 as yet for my friend
there is to the land.

Both you & Anne had
 the last day is 40 days
 for the date of birth of
 when we of God send 240
 down his so then stoppage
 then which will take you
 the date. You from 240
 then we want only how time
 to day 1 or day 2. Some of T.
 Please find shipping and commercial

P.S. remember that
I was a 2^d Gen from ap. we
have a 0th Major Astoria
through the New York club
and the 7th regt
July 29 1861
Geo. B. Schuyler,

your letter just
received. I am
very glad to hear
of your success.

There is a new school
the school at 100 N. 1st St.
and all the other
the school at 100 N. 1st St.
the school at 100 N. 1st St.

In the west nation
to be the contrast of myself to the
I shall display what I have
which will be even I to the nation
the most better. There is a
way by to show you a
The chief business is to
on the day of the
with, we can say
groups into the various
a great quantity of
are happy in the
current. That will
for, returned in all
No further, but it
through. Set on

I must have
 yesterday,
 around 3 hours
 on line, by
 of which I
 had been in
 for my friend
 that could
 be done that
 in 40 days
 of publication
 published 2 1/2
 than all others
 will tell you
 in June 2nd
 and how long
 by 2. Since 1907
 and communication

P.S. I now remember that
 there is a 2nd Green univ. which I
 thought of The Waldorf-Astoria
 abandoned the New York. I may find
 scheme as I appeared you will find
 July 27, 1905-

Dear Dr. Schmitt,

Your letter just
 arrived. I am
 sorry to hear that

I am sorry to hear that
 the value of the
 The copy
 have probably lightened
 the blow.

I am sorry to hear that

In the next machine of weight as
the same for instruction as the
I shall be getting values I think this
which will be over will be con
L. much better. There a important
can by no means good. The students be
The chief trouble is yesterday be
a high proportion yesterday be
side. We can not proportion be
jump into the vacuum for small so
a great quantity of the new world
air simply on this it was all I
current. But will I very much
good potential in all an student be
the future, liberal education proportion is
through. So

of nature
of which
large values
be over
better. There
means good
problem is
of present
can be
the reason
which of
on them
That will
in all
level of
of weight and strength
is the important
I think this action
will make competition
a important thing.
Dr. Andrews told me
yesterday that he made
proposition to a fellow
for some interest. Says
he now wants to think
on them all Saturday.
Is very much interested
and Andrews believes the
proposition will go
through. Sub -

The other hand must have
seen his name yesterday.
Up to this morning I have
nothing from him. My
other chance of which I
wrote is got but no
word as yet from my friend
Nor as to the Claude
perhaps you are aware that
the last day is 40 days
from the date of publication
when it is published? You
have two or three clippings
then which will tell you
the date. If June 22^d
then we would not have time
to say 1 or 2, time & T.
Please find clippings and communicate at once

P.S. I now remember that
there is a 2^d Gross of
troughs of The Waldorf
club and the Henry
club as of July

Dear Mr. Sch

Your call

is received.

I am

Very

Yours

Wm. L. G.

Let me

have

some

more

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "BELLEVUE, PHILADELPHIA"



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK.
THE BELLEVUE-STRATFORD, PHILADELPHIA.

The Waldorf-Astoria,

New York Aug 7 1901-

Dear Mr. Schell,

Up to this moment 9 P.M. I have
not yet received your letter telling me
of the sum of the order here to
order for the Or outfit. I suppose
it will reach me next morning.

I let the small children brought
- please I am very busy
and of which you will know. I
had a few experiments of interest
to them. They will put the same
interest in good sleep and when a

been long, probably to be sure. When
this is done I shall be able to show
them how and how we will discuss
the improvements for the manufacturing
part of view. Mr. Rivet's Paper
intended that we can produce a
better and more cheap. My idea
is to let them see of this improved
type a number on my own account,
we can easily sell a few and have
over the money. Meanwhile we ought
to be able to come at a mutually
satisfactory understanding relation for
the manufacturing of a great number.
I want to give them an idea of the
large quantities of what I found on
the English. Your position is also seen
that it would be an excellent market
being large enough for physicians use.
Please get all the things we have there
together. I shall like to see it.

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
 PHILADELPHIA CABLE ADDRESS "BELLEVUE, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
 THE BELLEVUE-STRATFORD, PHILADELPHIA.



THE BELLEVUE-STRATFORD



THE ASTORIA

The Waldorf-Astoria,

New York

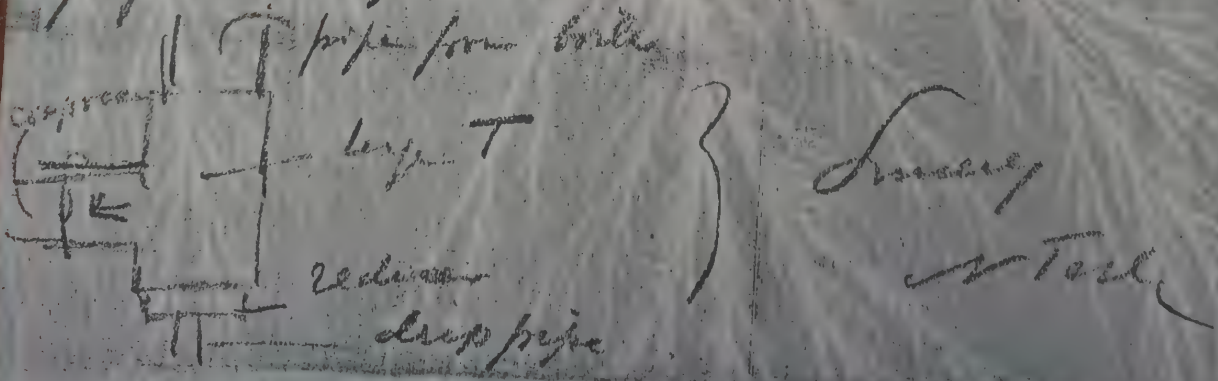
1890

Respectable to him. It is important to
 me. The two sides of the
 but one of them seems to be.

Even being that I have done
 a lot of thinking on the same
 values and have gone a step further.
 Expect to begin work on them
 to-morrow. I am quite sure
 that the Congress will
 do all their improvement. It
 ought to give us an excellent surprise.

- trying to get as high as
 possible just for nothing and the
 greatest of all possible actions.
 I am on an on hill as
 far as the village is over
 as it is now I shall be one
 the day after tomorrow - Wednesday
 the 1st of November - the 1st of Nov
 will write a telegram to home.

Home you know in the West of
 Scotland. I believe the
 follows have plenty of money but
 they are going to make a blunder.
 Do not forget drip on bottom of new
 pipe I would make it like this



The Waldorf-Astoria
New York.

Aug. 13. 1905

Dear Mr. Scherff,

never to turn on
as start off the steam,
so as to know the
position of the
engine when we
look at the valve
partially opened. The
glaze shows how
needed to the paper
though a small
long, prepared
begin the valve or drop the
side is leaky put in the steel
blades in the valves
Every
A. T. C.

The letter could not be spaced between
all proposed. Part the bottoms of the
kegs you are not caps to their studs
appears with the are greater in the
last modification, material values as the
made. In the caps holes are thicker
1, 2, 3, 4 (compression) as the shock-lugs
values) the bottom is plain for the valves
burned and a little like at 5 more
while the stud is not.
The caps 5, 6, 7, 8 are proposed. to have
not burned one, but a clean edge between
the studs belonging to the engine as the
then are. Provides valve which are

The Waldorf-Astoria
New York.

Aug. 13. 1905

Dear Mr. Scherff,

Thanking you for the

express which we received

this afternoon with

the Compressor I find

on drop the the way 7-

put in the steel-

blades in the valves

The latter could not be
cut properly. Per - the bo
haps you are not caps &
cylinders with the caps &
last modification) motion
made. In the caps blades
1, 2, 3, 4 (compression and the
valves) the bottom is plain
turned out a little
while the stud is not.
The caps 5, 6, 7 & are proper
not turned out, but the only
the studs belonging to a steel
then are. Besides the caps
valves

could not find the space between
the bottom of the
caps & their studs,
are greener in the
vicinity of the valves as the
caps bleed are thicker
at the stroke length.
Plain here the valves
is not like at 5 mm
It is a proper
one, but we ought to have
a clearance between
the engine and the
valve which now

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "BELLEVUE, PHILADELPHIA"



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK.
THE BELLEVUE-STRATFORD, PHILADELPHIA.

The Waldorf-Astoria,

New York Aug. 15 1905

Dear Mr. Schuff,

Nothing developed with Anderson today
except that he has four people who
will examine the compound and if its
worthwhile in Selby's factory put up all
the money necessary. This is all right
for the palace but if we use just now.
I hope the two Selbys, brothers etc.,
will bring the machine up to the
required mark.

Sorry to tell you that I had a
bad fall today while trying to get

on a Shulman. Several people
are developed. I understand a number of
the lead. That brings to my mind
the development of having a very
broader outlook.

We have looked back in the past
and by looking away it will be
probably drawn up. That pattern
will be sure to see him. I
expect that we will have
a very good one. It will be a fine in-
strument.

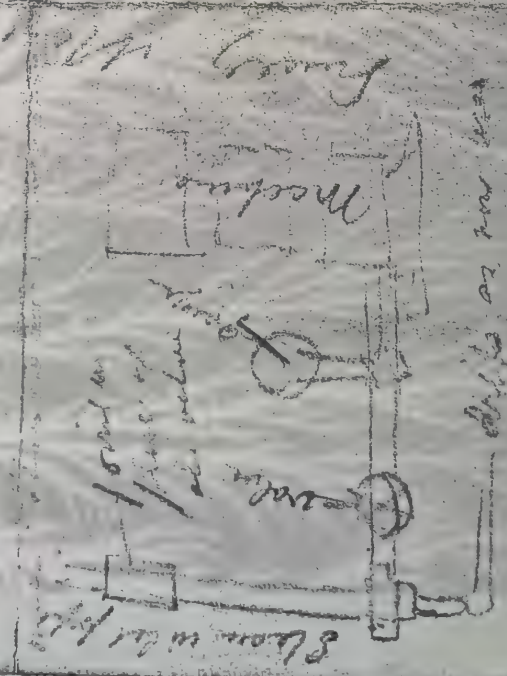
J.D. mentions the not complete silence
have heard nothing from Selma. Three days
have passed without receiving a disagreeable
letter, it is uncanny.

I hope you are doing them all
as well. Disappointed not to receive
word this evening.

Yours,

W. T. C.

We need a wide
 color in the orange
 band of the colors
 and ginger. It will
 be necessary to have a
 prism indeed, above
 the beam.



The Waldorf-Astoria
 New York.

Aug. 16. 1905
 Dear Mr. Scherff,

Your letter regarding
 the colored light
 is dated about
 10/10/05. I have been
 in the laboratory
 for several days
 and will be
 ready to start
 work on the
 subject.

the day after. Tom is here and we
the Thompsons from here. How pleasant
of view the camp - a better, the sand
reaches our camp - that is, the
well. The other Tom says for the
campers are in
the camp. We are ready for tomorrow's
provision and sub. our orders probably
Mentel. The weather is Friday evening.
will do the sheep to trouble before but
make. Let us by the hope of starting
celebrate today that a good American who
his party were here. How soon smaller.

The Waldorf-Astoria
New York.

Aug. 16, 1905

Dear Mr. Schaff,

Your letter came.

I have called many

times about

the matter for me.

I have been

very busy.

My work will be

very heavy and

will be very

Meeting

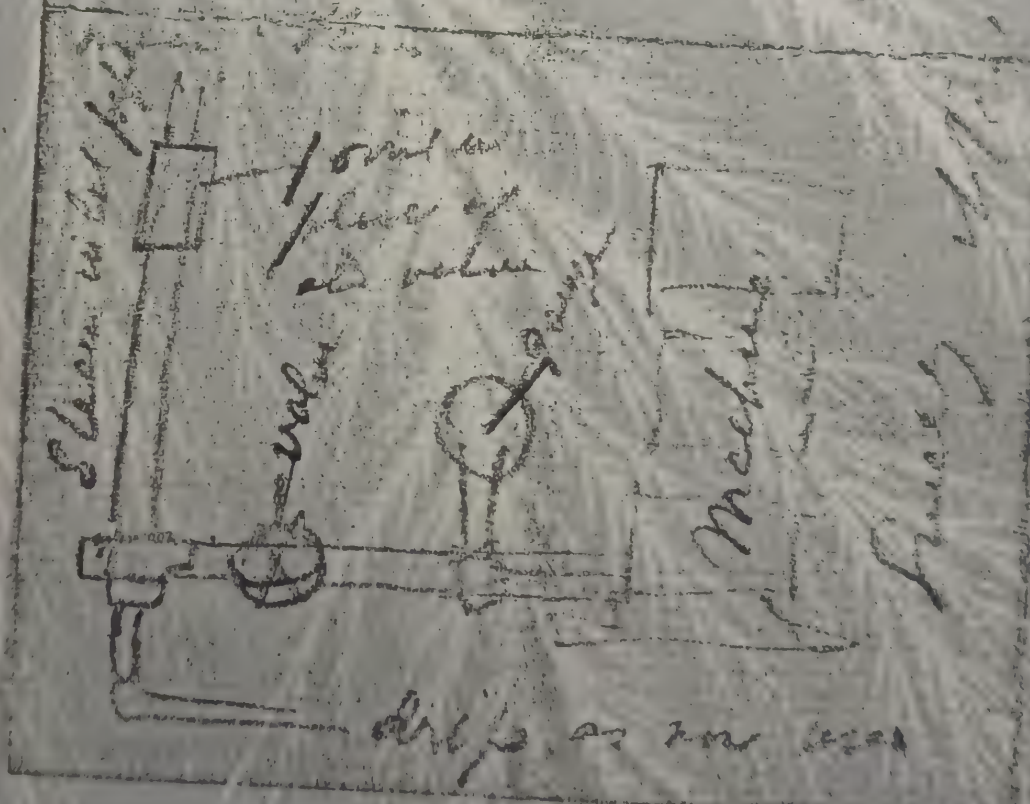
Meeting

as now

The day after, from
the Thompsons, from
of view the ampu-
ments on crutch-
rolls. The whole
family were in
bracketed and sub-
stantiated. The mother
will also be cheaper &
richer. From
Salem let us by the
telephone line that a
his party was here then

the. From in town only next
from some back. Has received
any - a letter, he said
consider - which indicates we
will dress up for the
the Congress will be
be some ready to move, the
ed sub - have other probably
a machine by Friday evening.
cheaper to Troubles before but
no by the hope of starting
dy that a good number, which
at be then seen smaller.

We want a red
 color in the orange
 part of the valves
 and ganges. It will
 be necessary to have a
 piston and valve close
 to the bottom.



Yours
 very
 truly
 J. H. ...

delay because of
the new regulations.

A gentle reminder
to see how the

things will come

a new list of

things in the

book is now

they will be

out easily.

Every
in the

The Waldorf Astoria
New York.

Aug. 17 1905

Dear Mr. Schenck,

We have had some

difficulties with the

printing of the

book. The delay has

been considerable. The one

is sufficiently complete

to be taken a last sheet

from the new plan

is at hand. The

new site with much we should see &
better than the old. and of great need
while the work on this the old house nearly
10th are released and finished.
ports advance very much I shall get the
boards getting them has been very long
from over 1000 ft. as expected to take
shape. are decided than our secondary.
ben settlers things. It will proceed
afternoon at work on the old house
better than for the house to fit the ports etc.
to show things will so that to show
begin tomorrow. very long and

7/9
The Waldorf-Astoria
New York.

Aug. 17 1905

Dear Mr. Scherff,

We have had some
drawbacks with the
material and they can
not be ready for
next week. The one is
sufficiently complete
to make a lot which
you will please
is as short as

new will work much better
better than the old one
while the work on this
10th we received a
good amount of work
from getting the
front on the
house. All details
have settled them
after a work
from the house
at the time we
begin to-morrow

he said he should see G
at end of about week
on this the car has not nearly
finished.

I shall get the
his drawings to-morrow
at request to take
them out Saturday.
It will probably
take a little time
to fit the parts etc.
so that we shall
not have much

deleg. because
the new policy, 1/2
an extra amount
to be for the
ships will be
a new building.
The new building
which is now under
way will be
out early.

Very
Yours

Ben
We
don't
know
how
much
it will
cost
to build
the new
building
is not
yet
started

NEW YORK: EARLY ADDRESS: WALDORF, NEW YORK.
CHICAGO: EARLY ADDRESS: BELLEVUE, CHICAGO.



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK.
THE BELLEVUE-STRATFORD, PHILADELPHIA.

The Waldorf-Astoria,

New York Aug 20 1905

Dear Dr. Scherff,

You must have noticed that this afternoon when we began the experiment with the Compressor I first let the drop valve open to blow out all the water and then turned on rather quickly the steam in the machine. It started instantly as I expected. I proceeded in this manner just to see whether the troubles caused by the condensation water in the engine which is cold at start could be overcome. Indeedly they came as the experience showed. This was the first result. The second was that we did not need

I believe the Congressmen. The third that
the center of attention is when it should be
the focus that the work is done only
to show. The fifth that the action
be done better under all conditions, even
if it falls out. The sixth that the
house of the house is showing is dead
deadly and. This may be the good enough
for today.

I notice that the pipe carrying the water
passed to Congressmen is not connected with
the pipe through a very narrow band and
very abnormal. Please you do this the
large pipe be gone down.

The broken piece of pipe before the
water should be replaced.

I believe that the large external
pipe must have the shape of a
certain form. The pipe was great,
when I tried to turn the stone it
was the

Remember to keep everything clean.
Do not forget correspondence. Truly
yours

The Waldorf-Astoria
New York.

Aug. 22. 1901.

Dear Mr. Schuyler,

I am disappointed as
to returns. They will
not be ready for probably
two days but the new
ring for large compasses is
ready. We have sent
the pattern of base for
new bracelet to the
foundry. Work has
begun on the parts.

I see from the papers
this morning that my
friend J. P. has been
cruising near the
Coast is now at
Newport. While there I am afraid they would
not answer them.
is hope, though I
am beginning to share to be progressing well,
you I hope to see soon.
too pleased to receive
this morning my
Nelson's picture
stationery and methods
of and have erected
a ship in the opposite
camp. The address
claims were inserted.
The new mutton seen
Expected to be at least
Dinner
N. York

The Waldorf-Astoria
New York.

Aug. 22. 1905-

Dear Mr. Scherff,

A disappointment as
to valves. They will
not be ready for probably
two days, but the new
way for loop compressor is
made. We have sent
the pattern of base for
new bedstead to the
foundry. Work has
begun on the parts.

I see from the papers that
this morning that my sister
great J.P. has been
cruising near the
C.R. and is now at
Newport. While there I
will be answer there
is hope, though I
am beginning to show to
your satisfaction. Expect
to be pleased to receive
this morning my

people I have seen -
by stationary some methods
have been used here
The a stir in the opposite
of camp. The additional
claims were inserted.
There I was afraid they would
not.

The new method seen
here to be progressing well,
expected to be out by -

William Brown
Dunbar
W. T. R.

My letter will be lost
 soon. The value of
 the currency should be
 large. Of the value
 see the shop in
 P.O. Box, no. 100, New York.
 and letters are gone
 about.

The Waldorf Astoria
 New York.

Aug. 24 1901

I expect to be at I have been in
 Kentucky to see your new house in the model
 house.

The value is
 very low - some
 approximated - well. It is
 very simple but popular
 in the long speaking of
 the value. The shell
 plates will spin around
 as they are made and
 have been for many years.

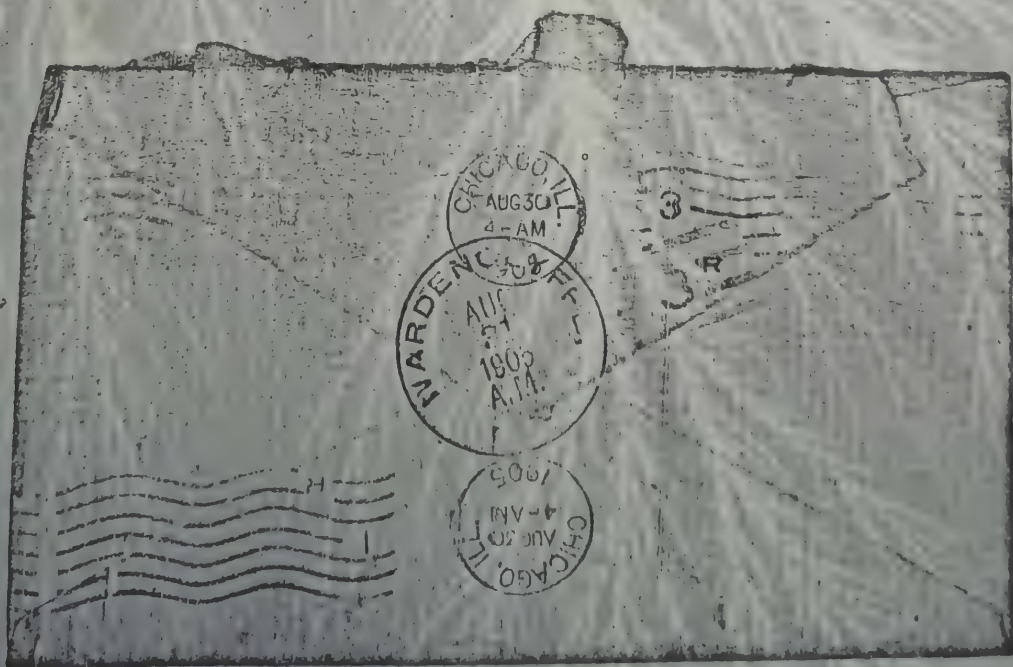
The Waldorf Astoria
 Fifth Avenue 330 and 34th Streets
 and Hotel Corral,
 New York.

George Scherff
 Wardencliff
 L. I.

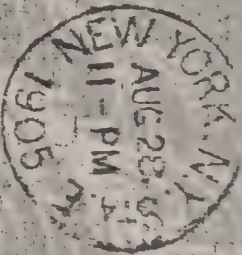
AUG 25 1901
 5:11 PM
 N.Y.

at least connection
 from I suppose also
 dropped "gas". But the
 air will flow to the
 four compression chambers
 from the central portion
 of the connecting tube through
 great many holes. On the
 bottom there will be
 a drop for any oil
 that may gather there.
 The pressure connection
 on the back will be
 provided with a valve
 1 1/4". All this will
 be delivered to-morrow.

The work on the same
 machine is also progressing.
 I will send you if the
 following 1) for the gas
 out, 2) repair leak on
 pipe at jet large rod
 in order 3) get plenty of
 fuel 4) take off the back-
 pressure valve 5) slip on
 the pipe leading to the
 gauge and the valves
 the pressure on the machine
 a road almost closing the
 pipe. This will kill the
 vibration of the indicator
 on the gauge, otherwise



The Masbort-Matoria
Fifth Avenue 332 and 34th Streets
and Astor Court.
New York.



Wesley S. Clark
Wendell Lytle

W. S.

The Waldorf-Astoria
New York.

Aug. 24 1905

Dear Mr. Schuyler,

The valves are
ready to - now evening.
I have had an improve-
ment in the model be
experimented with. It is
very simple but important
in the long opening of
the valves. The steel-
plates will spin around
as they revolve and
thus wear away for me.

a hard connection. The
first I have also. The
top of the well is
now all flow to the I will
four compressors chambers following
from the control position out,
the connecting tube the pipe
will hang loose. On the
the bottom there will be
a drop for any oil fuel up
the way gather there. The pipe
the pressure connection gauge
the back will be the pressure
provided with valves, a road
1 1/4". All this will pipe
be delivered 6. morn, with
on the

at least connection. The work
from I have also. The work
expected. The work
will flow to the I will
four compressor chambers, following
from the control point out,
at the coming, like the pipe
will hang below. The pipe
the bottom. There will be no
the a drop for any oil from
the way further down. The pipe
the pressure connection, gauge
the back will be the pressure
provided with valves, a road
1 1/4". All this will be pipe
be delivered to room, with
on the

The work on the same
the machine is also progressing.
to the I will send you of the
following 1) Turn the green
out, 2) repair leak on
the large pipe at first large rod
in order 3) get plenty of
oil - fuel & take off the back-
pressure valve & slip on
there. The pipe leading to the
low gauge should be widened
the pressure on the machine
reducing a rod almost closing the
pipe. This will kill the
vibration of the indicator
on the gauge, otherwise

The letter will not last
long. The section of
the connecting channel
be large. Of some others
on the the slope is 2
order, no spider webs. 7) Dear
some letters are spoken
about.

I expect to be out
Wednesday at the first meeting
Friday

✓ Take

The
ready
I have
experi-
very
in the
the v
the de
as the
thus

on 12 June, 1881



drills every in embarking
Capital. Please embrace
limited conditions as far
as possible as well as you
can. The boss, and
he is not but before
the day of the war
was when you
had fortune the term
to the bars. There I
shall bring with me
forward the day after to do
too. The wife is getting
in shape. She is
ready by end of the week
during the week.

The Waldorf-Astoria
New York.

Sept. 20 1901

Dear Dr. Schell,

I wish to haste to
tell you something
about the matter. The
fact is that the
committee is extremely
well this morning
paper. The fact
that he is arrested

no more charges as I am after my
is ~~second~~ ^{first} ~~with~~ he ~~first~~ Charles just
is an ~~old~~ ^{old} criminal, but for about
I never would have the business looks
May be such a ~~man~~ ^{man} ~~not~~ promising. If
May be possible to be shot as care
would be ~~for~~ ^{for} ~~in~~ ⁱⁿ we must
be ~~with~~ ^{with} ~~some~~ ^{some} ~~body~~ ^{body}
is always at ~~the~~ ^{the} ~~edge~~ ^{edge} but I should
be ~~pleased~~ ^{pleased} ~~to~~ ^{to} ~~say~~ ^{say} that on them
I hope not ~~7~~ ⁷ ~~for~~ ^{for} ~~proportion~~ ^{proportion} ~~then~~
are feeling better, will be in good

The Waldorf-Astoria
New York.

Sept. 20 1905

Dear Dr. Schell,

I wish to thank you
very sincerely
for the
kindness
shown to me
in the
hospital
and for the
papers. The
kindness
shown to me
has been
greatly
appreciated.

on grave charges & I am
 as ^{soon} ~~as~~ ^{possible} ~~as~~ he
 is an ~~old~~ ^{old} criminal, ^{friend}
 I have ~~not~~ ^{not} ~~been~~ ^{been} ~~the~~
 thought ~~such~~ ^{not}
 may ~~possibly~~ ^{possibly} ~~to~~ ^{he}
 consider ~~any~~ ^{any} ~~farther~~ ^{farther} ~~to~~ ^{to}
~~be~~ ^{be} ~~look~~ ^{look}
~~at~~ ^{at} ~~else~~ ^{else}
~~the~~ ^{the} ~~day~~ ^{day}
 I have ~~not~~ ^{not} ~~yet~~ ^{yet}
 on ~~feeling~~ ^{feeling} ~~better~~ ^{better}, ^{will}

charges & I am after my
friend Charles just
criminally, back from abroad.
The business looks
more promising. If
he shares it we can
look for somebody
else but I should
say that on the
proposition that
will be a great

difficultly in understanding
Capital.

Please continue to
kindly endeavor to for
opportunity as well as you
can. The boxes will be

sent soon but before
leaving them.

I will
tell

must join the community
to the bars. There I

shall bring with them
possibly the day after to-day.

The bird is getting
into shape, should be

ready by end of this week.
Sincerely yours

Dear

I will

tell

know

like

know

will

page

now

NEW YORK CABLE ADDRESS "WALDORF NEW YORK"
PHILADELPHIA CABLE ADDRESS "BELLEVUE PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
THE BELLEVUE-STRATFORD, PHILADELPHIA.



THE BELLEVUE-STRATFORD



THE ASTORIA

The Waldorf-Astoria,

New York Oct. 3 1905

Dear Mr. Schmitt,

Your letter just received. I have
written you that I shall come on
Thursday noon. The valves for compression
will be ready to deliver. I also
expect to bring out a spool
for the charging coil as well as one
for a new secondary. I have been
troubled by the way much to make
a deal with the valves and must

bring the mechanical complexities to
the city, so as to settle certain
important details of manufacturing
which is to pull me out
of the hole.

My friend J. P. said he would
change his strategy that he re-
jects the business is not in
his line. It is rather late in
the day for him to appear here but
I am afraid we shall have to
look elsewhere for funds. We shall
get them I feel sure because
the proposition is a very good
one as both myself & I.
can convince that the line
of the machine business is good.

During & Ted
Please have process particularly process carbon
copy. Hope you have good Saturday.

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "BELLEVUE, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, New York.
THE BELLEVUE-STRATFORD, Philadelphia.



THE BELLEVUE-STRATFORD



THE ASTORIA

The Waldorf-Astoria,

New York Oct. 6 1905

Dear Dr. Scherff

The changes on the instrument
will take all the time to-morrow
and it will not be possible for me
to come out as I expected before Sunday.

I found the day that a number of
small improvements can be made on
the occasion. So that by next week
all ought to be in very good shape.

The recording I look will be
broken down but I am glad to
find when I look the errors

That the insulation process as we
expected it but was perfect.
There was not the slightest defect
anywhere. The break occurred along
the rubber through the solder joint.
When we remedy the weakness on that
spot it will be possible to strain
the coil much higher. The customer
holds out very well as I have put
it to a rather severe test.

I had a talk today with Johnson
the lawyer of the property owners down
there. He seems to be rather a nice
fellow and I understood that they are
to make a number of changes. He
told me among others that they are
to have a different name (this is confidential)
I was glad to hear all and also that
there was no trouble between the
front problem between the

Lucy N. Fisher

THE ASTORIA

Dear Dr. Scherff

New York OK 9 1905

I saw my friend Asaph in London
he declared himself ready to take up his
ditch a program for the manufacture of the
instruments, perhaps forming a small company.
He is an old friend and absolutely sure.
That would be excellent but for the trouble
of the movement. When does the P. Inf. vote
become due? Will you please let me hear
about it by return mail.

The offending people called a sin. They
wrote down to Congress and slavery & sin.
The opposition wrote. They say. They will

and through the original proposition without
Selling. This means that I must have to
rip up something for them on that day.
It is still a puzzle. Suppose you
propose Randall that I give him a 2 m.
note for say 100? What do you
developing this. He will have really
to accept it as his 30 days obligation.
At any rate you may try.

The Pearson people expect to finish
the other section of the house all except
secondary. They will want the charging
cord. It will be necessary for you to
hurry the condenser with three papers and
they will have to be treated thoroughly.
I expect that letter to reach you by
noon tomorrow Tuesday and you will
have to have the cord and the instrument
including condenser which is still good.
What I want to get particularly in the
new secondary which I have has passed
out well. Then you cannot do anything else
sec. secondary by express so that I get it
by noon arriving Sunday at Tarkenton

me. / Meanwhile please do
all as agreed. Hope the
cost will come out all
right.

Sincerely
J

I should well
reassure you

N. Verbeke

The Waldorf Astoria
New York.

Oct. 9, 1900.

Dear Mr. Scherff,

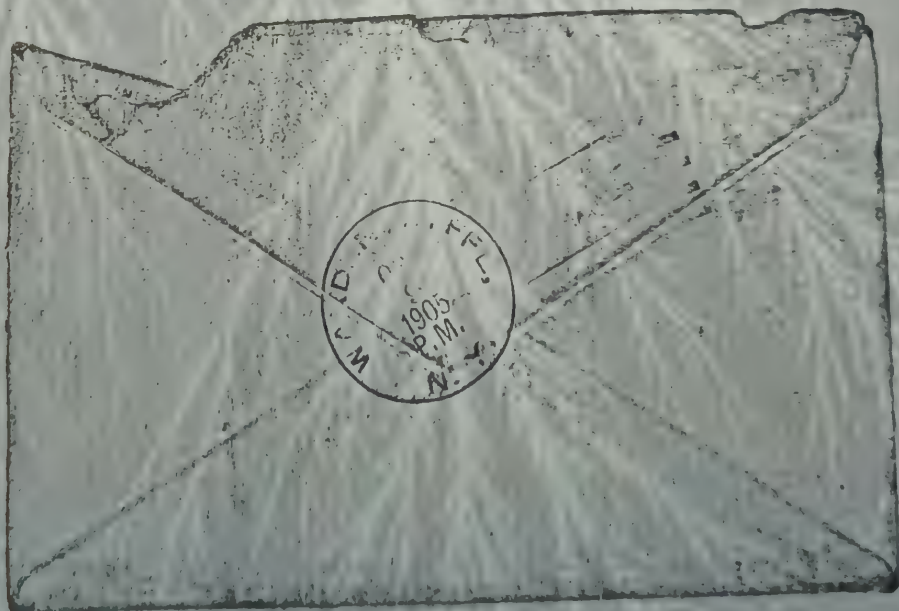
The other expenses will
be added to the balance. I
feel that to be generous
as I have proposed myself
to be with them would
be out of place. Every
dollar that I get for
manufacture will be pain-
fully earned and I think
that if I can spare some-

Mr. George Scherff

Wardenlyff

L. J.

thing for others. I'd better rec'd to a good evening
 let them for first order. It would be
 most desirable. Please be sure
 go carefully over the I have thought after
 accounts as see just what I have learnt from
 it done to them. I am afraid who was out.
 shall pay only for work whether that if we
 they have done nothing but one or two we would
 not. As you know I don't mind the distance.
 have intended to pay them. It would be practicable to
 full time as though they live anywhere in the
 had work without interruption. It would be regular
 I shall see some friends running the staying would
 be day but cannot yet be a small matter.
 make a proposition before. If something develops
 the new settlement is all to day you will hear from



Mr. George Scherff
Wardenech
L. J.

The Waldorf-Astoria
New York.

Oct. 9. 1908.

Dear Dr. Schacht,

The labor expenses with
Clerke & Greenman have
completely upset me. I
feel that to be generous
as I have proposed myself
to be with them would
be out of place. Every
clothing which I get for
manufacture will be perni-
ciously earned and I think
that if I can spare some-

The Waldborf-Historia
New York.

Oct. 9. 1904.

Dear Dr. Schmitt,

The late expenses will
be to be paid from the
completely empty box, I
feel that to be generous
as I have proposed myself
to be with them would
be out of place. Every
other thing I get for
the expenses will be paid -
fully covered and I think
that if I can spare some -

thing for others. I had better see if
let those ~~profit~~ who are order
most deserving. Please be so
so carefully over the I have
accounts as see just what that
is due to them. I am afraid
shall pay only for work. Whatever
they have done nothing had other
more. As you know I have been
intended to pay them. It would
be true as though they live a
hard work without interruption. I have
I shall be some friends running
to day but cannot yet be a
make a provision against. If
the new arrangement is all to day

I let better ready I am for working
who are orders. It would not
Please the size.

I have thought after
just that that I have learnt from
I a friend who was sent
for work. That if we
nothing had one or two we could
have I but would the distance.
It would be practical to
pay them live anywhere in the
rough they neighbourhood as if the
in language place would be regular
friends running the staying would
as yet be a small matter.
Therefore If something develops
as to day you will hear from

Now. / Meanwhile please do
all as agreed. Hope the
case will come out all
right.

Truly

Yours will
subscribed yours

W. T. B.

Dear

The
Clerk. To
completely
satisfy the
as I have
to be
be out
duty
The report
fully
and if

And a separate copy of some of the
the most important ones to be put in the
handbook



NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "BELLEVUE, PHILADELPHIA"



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK
THE BELLEVUE-STRATFORD, PHILADELPHIA

The Waldorf-Astoria,

New York Oct. 11 1905

Dear Mr. Scherff,

I got the instrument today and
am well satisfied with its appearance.
The coil you forwarded (secondary) seems
to be all right, but the condenser
and not short & developed in
defect when I tested it. That is
only a trifling thing and can be re-
dressed easily. The other machine
will be probably finished tomorrow.

I expect that you have heard the
charges and so that there will be
no seconding to fear.

Hope you are progressing in
the making up of the new edition.
Also that you will perform a
coup d'état or rather a coup
de force successfully.

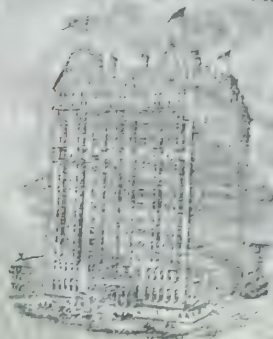
I have no interests in my life.
The troubles are so many that I am
unable to see what evolution there
has been provided for. This time he
will have to send some letters with
a fresh bundle.

The Peoria people are fixating on the
price of the instrument. I hope it will be
unavoidable. We shall have to wait the
secondaries and make the Condenser. All
the rest can be done in New York.
Will write you if anything of importance should occur.
Yours at Paris.

NEW YORK CARLY ADDRESS "WALDORF NEW YORK"
PHILADELPHIA CARLY ADDRESS "BELLEVUE PHILADELPHIA"



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK
THE BELLEVUE-STRATFORD, PHILADELPHIA

The Waldorf-Astoria,

New York Oct. 11 1905

Dear Mr. Scherff,

I got the instrument today and
can well believe it will be of service.
The coil you forwarded (secondary) seems
to be all right, but the condenser
could not stand to develop a
defect when I shined it. That is
only a hope that can be seen
due to it. The other machine
will be probably finished tomorrow.

I expect that you have found the
charging and so that there will be
no second to find.

Hope you are progressing in
the making of the new edition.
Also that you will perform a
coup d'état or rather a coup
de main successfully.

I have no interest in my life.
The troubles are so many that I am
unable to see what solution the good
Lord has provided for. This time he
will have to send some class with
a full bundle.

The Ocean people are fixing on the
price of the instrument. I hope it will be
reasonable. We shall have to wait the
secondaries and make the Condensers. All
the rest can be done in New York.
Will have you if anything of importance should occur.
Yours at Paris.

Things will look

better. I am already

sure to carry out the

proposition with respect to

the other houses.

The other instrument has been

changed and I shall get it

in shape all ready with

Colonel S. L. C. I propose to

put the new standard in

it and then to show

one machine completely in

destructive to my friend

You will hear from me soon

or possibly in passing

W. F. C.

The Waldorf-Astoria
New York.

Oct. 11, 1901-

Dear Dr. Schuyler

The instrument reached

you last night and

I found with it and

a letter from the

dear friend to all

of the despite of the

fact that I was

very far from

did not apply the

instrument to explain the

Comprehension. When we think very carefully,
about the business we hope you will succeed
must apply the principles of the Renaissance for-
for a long time and with position. It would
Core. The results were in important at the
be excellent. I am
am greatly convinced, however, I believe
- You did not say anything - to the business. I am
things about the new but surprised at the
space (sharpening and) how low value. But
I expressed that it will be. Modern are so
be around to-day. I have no doubt.
Remember that the end of the bridge
will be another bridge just a little less

The Waldorf-Astoria.
New York.

Oct. 11, 1901-

Dear Dr. Schuyler

The instrument reached
me last night and
I fooled with it until
a late hour. The sun
shiny sun. In all
aspects despite of the
hours. I was afraid
they would find as in
did not apply the
instrument after the
Tells

Compression. When we
start the process we
must apply the pressure
for a long time and with
care. The results will
be excellent. I am
quite convinced,
you don't see anything -
thing about the new
space (charging coil)
I expect that it will
be around the day. Please
remember that the ending
will be a good deal for

When we think very carefully.
I hope you will succeed
in procuring a fine Rendell position. It would
admit with position. It would
be important at this
stage.
I wrote a letter
regarding the Garrison. I was
not surprised at his
low but rather that
it was the Nelson are so
I have insisted.
I can see bridge
and a little gap

Wendy that is the
next one make.

My thinking the
unhappy the the

house I got from
the other office. There

is no doubt that the
all the adjustment is on

concerning the the
with the the the

the. I feel good
pleased in the morning

will in the morning
evening again. Please

earlier please send the
the as in the in

the paid. surely at the

the paid. surely at the

the paid. surely at the

The Nassau Hotel
New York.

Oct. 18, 1905

Dear Mr. Schuyt,

I have just read

you will be read

the second day. You

can prepare the paper

and the arrangement

for visiting is made.

Heard both parts. It

is very interesting. I have

the book for the

Could already and I the intended limit
say be out the day after as it send out
C. Morris as well
know something definite to improve. Indeed
to that time the presence of the
I was surprised he needs before looking in
will the statement deteriorated. You have
noted then I looks better than the
it here. The mail contains did not
I suppose this was keep the charge boy
to consider he will then I believe as
the evidence and due simply to
stand. It seems per- the poor manufacturing
fully safe for I the poor manufacturing
showed it per beyond power of the fibre
basketry. he shall

The Waldorf-Astoria
New York.

Oct. 15, 1905

Dear Mr. Schuff,

I have just read
your letter of the
second day. You
can prepare the paper
and the arrangement
for wedding is made
ready both parts. It
is necessary to determine
the hours from the

Could already send. I
say to you the day after the
L. morning as well as
know something definite to
be that time.

I was surprised to see
will be the restaurant
wrote when I looked
it here. The mail
important thing is
to mention how much
the order was this
stand. It seems per-
fectly safe for I
should it for long
bushy

and I the intended limit
day after and it seems only
will
definite to improve. Evidently
the pressure of the
and be needs before working is
detri mental. You have
better noted that the
will condemn did not
keep the charge long
but will then I believe as
and due to the
per- the poor manufacturing
I the poor of the fibre
beyond working. be there

Wendy that in the
next we make

By showing the
importance of the
knowledge I got from
theiner effects. There
is no doubt that all
the subject matter are
carefully considered and
results will be seen in the
future. I feel quite
pleased and
will visit L. more
evening again. Please
earlier. Please attend to
business as soon as the
first part. sincerely
A. T. C.

P.S

the overflood people

could, I lost them

I am ready to carry

not appeared. They

said the was all

that I was in the

ed they were

to the water. I work

they were at once.

The Nassau Hotel
New York.

Oct. 19, 1905

Dear Mr. Schell,

I am sorry to find

that I shall not be

able to take the early

train to-morrow Friday

as I expected. The

business with my friend

L. S. Brown is not

yet concluded; but

we expect to see

wrote to-morrow, either to-morrow
I would have been prepared or Saturday morning.
are all ^{in the} you can be. The indications are that
that the market for the poorer people are
the instructions to be taken a few price. The
manufactured. Hopkinton Sept. 1855 - the 6-day
market has been here. Now I shall be so-
called. If you get the friends who have they
everything you can find can make them.
The cause of them to be forgot to
performances, only, from the believe a little
as manufacturers are with the poor than
can do work is together I have given you
the steps when I am using light oil.
one. This will be
Sincerely Yours V. F. H. O.S.

The Waldorf-Astoria
New York.

Oct. 19, 1905

Dear Mr. Schuff,

I am sorry to find
that I shall not be
able to take the early
train to-morrow Friday
as I expected. The
business with my friend
L. at home is not
yet concluded, but
we expect the ~~conclusion~~ is

will be L - more or less, either to
I need you to prepare or School
all details you can be The index
show the market for the Perce
the instruments to be make a fa
manufactured. Weyburn Sept. 1887
must have that be Not I
said. If you get the first
everything you can from can make
the cases of them To not
performances only free the
at manufacturers are with the
can work it together I have g
in shape when I am using
one. This will be

either to-morrow afternoon
or Saturday morning.
The indications are that
the people people will
make a fair price. The
Sept. 1st to the 6-day
that I shall be sur-
- getting for the low they
can make them.
Do not forget to
oil the valves a little
with the pump. Then
I have given you
using light oil.
Sincerely

W. T. C. P.S.

P.S

The Overseas people

Adm.) Let them

I am ready to carry

out agreement. They

said that was all

~~and they will attend~~

to the well - I wish

they would at once,

Dear Mr

I am

that

able to

have to

as I am

business

L. A

get a

re up

Nothing definite as yet with
very few flowers.

The Waldorf-Astoria
New York.

Oct. 26. 1901.

Der H. Schacht,

please be careful.

Low. 2000 yds. 2000 yds.

to 2224 m. present. km -

1. *Chamaecyparis*
 2. *Juniperus*
 3. *Thuja*
 4. *Podocarpus*
 5. *Sciadopitys*
 6. *Widdowsonia*
 7. *Podocarpus*
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 96. *Podocarpus*
 97. *Podocarpus*
 98. *Podocarpus*
 99. *Podocarpus*
 100. *Podocarpus*

Del. 11
1862
Cousins

you have been

and
Microchloa

Q. L.

The Librarian

The following are the
 names of the
 persons who
 have been
 appointed to
 the various
 committees
 of the
 Association.

100

did not understand
fully the present
is propagandist value
of the property. Then
is very important.

R. Andrews has agreed
to furnish sample money
to build a spirit election
on which whole we are
perpetrating Congress. He
expected to be elected
to get them mentioned
quickly as at some
expense. This is good.

R. Andrews will
take up value of
insurance 6-12-18
I get estimate of
\$100 for 100 pictures
They gave him a check
yesterday. Price
of them with D. Andrew
will not exceed \$20-25
He is sure the rest
for \$10 to the
price may be \$25-30
certainly then even the
price of pictures

This is all I have to say
nothing definite as yet with
my first letter.

The Waldorf-Astoria
New York.

Oct. 26. 1905.

Dear Mr. Scherff,

Please be careful
to receive anyone
at my present home -
I am not self there asking for
you with cordial
at that place
between them etc.

Also a note of my
all relations in business
and. This is personal. Sincerely
Yours
J. T. Scherff

and will endeavor
fairly to present
to you the value
of the property. This
is very important,

Mr. Andrews has agreed
to furnish enough money
to buy a system of
oracles. He is an
perfectly competent
expert in the whole
to get them made
quickly at small
expense. This is good.

He
like
some
I go
over
They
idea
of the
will
be
for
for
and
plan

decide
value
Then
I get
agreed
money
election
we are
be
decide
under
small
good

R. H. Johnson will
take up million of
American body then
I get estimate of
Peace for 100 nations
They gave me a close
idea yesterday. Price
of their work and material
will not exceed \$20-30
be in fact the real
for \$10. So that
for me my \$30-40
covering them over the
plenty of purchases

[illegible]

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
 PHILADELPHIA CABLE ADDRESS "BELLEVUE, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK
 THE BELLEVUE-STRATFORD, PHILADELPHIA



THE BELLEVUE-STRATFORD



THE ASTORIA

The Waldorf-Astoria,

New York Oct. 29 1901

Dear Dr. Schuff,

I am quite pleased with your understanding with Heston. He has expressed his will and I have a feeling that he will develop into a splendid character. Will forward him some of the fine stories of the A.T.C. with respectful note.

Please keep in mind that I am blowing about my place all the time and trying to interest some millionaires in my undertaking. Some one might hear of it and

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
 PHILADELPHIA CABLE ADDRESS "BELLEVUE, PHILADELPHIA"



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK
 THE BELLEVUE-STRATFORD, PHILADELPHIA

The Waldorf-Astoria,

New York Oct. 30 1904

Dear Mr. Scherff,

The steamer has forwarded this
 morning, I trust they have reached
 you by this time.

The day passed without my getting
 half of my letters. I have so much
 to do as the delight of newspaper
 at the Peace days like much
 of my time.

I am expressing the kindest regards
 to all your family and hope to see you
 at the convention (Nov. 1st) as agreed.

Seven papers between each layer. The
space a each each $\frac{1}{8}$ ".
I advise that the outer flanges have
no grooves. You may boil one by
taking them off, after cool is over. Do
not forget to make an slot with
the screw for the connection of the
and to the screw in the middle
flange. Do this before beginning the
drawing, as it will be difficult
to do it later.

As you will see the first few
papers will be a little narrower
on account of the square boxes on
the inside piece. Remember that
when beginning the distance between
the outer flanges of side flanges is $4\frac{1}{8}$ ".

Mr. Warington was not a body. I did
not think it advisable to postpone the
trial. Expect to do so in a day or two.

P.S. Several electricians
and wireless performers called at home.
The new coil has attracted attention. They asked how long the

patent will run

from the rubber country
 living, from the bridge
 back they are sometimes
 3" long. I have seen
 Andromeda with 4 shoots
 will show the wood
 treated.
 The over people called
 to do this they will
 come out with me as
 soon as possible possibly
 Thursday.
 Both petals are round, I
 hope as the cotton has
 turned off early.
 New York, Every N.Y.

Please look out for wood,
 which me if you have from
 The Harbor of Astoria
 New York.

Nov. 13 1905.

Dear Dr. Schuyler,

Thirteen seems C-L
 my lucky number
 First of all I will
 The F. I will for me
 number as I have
 long out of his office,
 He was most friendly
 and said that he
 was sorry he

to go out but he
will talk with me
some other day. I
love my men
as the law of God's
children works. I know
it. I hope about the
order for 100 horses, but
said he would call me
later. I think some
thing will come of my
proposition. I hope
also that the chief
engineer is advised of

Please look out for word.
Write me if you have from
The Waldorf-Astoria
New York.

Nov. 13 1905.

Dear Dr. Scherff,

Thirteen seems to be
a lucky number.
First of all I have
Dr. F. for a
house as he was
living out of his office.
He was most friendly
and said that he
was very kind.

be for one but he R. R.
with talk with me send
some other. Aug. 2.
have my men as one The

as the law of gravi- every
tation works. I know
it. message

See Stephens about the end
order for 100 horses. he by
said he would let me clear
Russ. I think some of the
thing will come of my people
proposition. light

also let the chief
express to address of
Stonewall

the R. Ry. Company the
one said something which
I. gave me encouragement.
as one The position was this
grove - every (brought by a
I know passenger (the I said)
about the and it works splendid.
the by. The stream from
at the clear across. Then
some - of the flange is en-
of my plate covered with
thick light than the
- 7. spring is set low.
However, one also

from the rubber cured
leaves. From the binding
both the same sometimes
3" long. I think the
leaves are 4 stalks
in all about the same
length.

The one longer called
long they will
come out and are as
some as to be for
Thursday.

Both plants are said
to be as the others have
been off early.

Ploughing Sunday & Tuesday

Plough
Vol.

Dec

The

July

For

The

from

July

the

and

was

The Waldorf-Astoria
New York.

Dec 4 1905

My dear Mr. Schuyler,

I just a line to let

you that I have managed

to get some of the

bottle. Of course I am

awfully tired and will

be very careful tomorrow

for some reason

and will not

please to see you

[illegible]

The Waldorf-Astoria
New York.

Dec. 4 1905.

My dear Mr. Schuyler,

I am a little late to tell
you that I have managed
to get some of the best
little - of course I am
lovely - and I am
heart - and I am
for - and I am
Please to the point

up the matter with L
the C. J. Brackbill 7
do not stand there
they could have been
on the place between them
many to go to the
distant and have
the for the
long to have and
better chance to do
this through some
wonderful person
let me know L
There
was

There are no known
less as ten or possible
sources of Tarsus

My

I

you

to go

little

house

near

for

see

will I want in fully to
are any thing else for the
summer the covering of the upper
section will not need to be
especially described, can be the
same as that of the section below.

I find Iquian paper which will
be suitable for construction. Paper
to place over the known as
iron as I have for the reason
hardly by C. I. I have the
one 7-11 to show the
note P. J. Dore? the will
it be done? Known - packed
any by its check book to do
not know date.

Sincerely

N. Tark

March 28 1906.

Dear Mr. Scherff,

I am glad to have
received it - conclusion will
reference to the covering
of the lower which can
not be improved after
all glass is the
best. It is the cheapest
covering to begin with.
The charge is 8 1/2 cents per
square foot 1/4" thick. The

[illegible]

MS

March 24 1866.

Dear Mr. Scherff,

I am glad to have
received at a conclusion with
reference to the covering
of the tower which can
not be improved, after
all glass ribbed is the
best. It is the cheapest
covering to begin with.
The charge is 8 1/2 cents per
square foot $\frac{1}{8}$ " thick. The

outer area of the house is
approximately 30000 Sq. feet.

Cost of material $30000 \times \frac{8.5}{100} =$
 $85 \times 30 = \underline{\underline{\$2550}}$ with laps
 $\$3000 =$ will cover total cost.

Note 9 That we do not require
sheathing. i.e. that will be
run in the run 32 strips
up to hold plates.

b) we do not want any isolation //
thereover

c) we get all the light in
room inside

d) best isolation on outside
against moisture

e) perfectly fireproof covering.

f) Tower will look very tall
as improving

g) Wood boards will always
be kept warm to dry
to well insulated.

h) The plates which come up
to 12 feet length will
be cut all to exact size

i) Order can be filled
within six weeks

as down 1) quickest time

e. l. c.

The tower can be painted
any color if necessary. Also
in any ornamental way.
As I am sure of this

either it would be folly to
use anything else. In this
summer the covering of the upper
section will not need to be
specifically designed, can be the
same as that of the section below.

I found Japanese paper which will
be suitable for condensers. Expect
to place order to Morrow as
soon as I hear from the Har-
vardily Mfg Co.

Can you tell me about the
role P. J. Bank? When will
it be done? Have packed
away my old chess book & do
not know date.

Sincerely

N. T. V. T. V.

NEW YORK CABLE ADDRESS "WALDORF NEW YORK"
PHILADELPHIA CABLE ADDRESS "BELLEVUE PHILADELPHIA"



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK
THE BELLEVUE-STRATFORD, PHILADELPHIA

The Waldorf-Astoria,

New York, April 28, 1906

Dear H. Scheriff -

Inclosed check \$2.00 which please
forward to H. Fenner on our reel.
Say that my business is developing slowly
but steadily. Also his not to
do anything more for Clark on my
account. I asked H. Fenner help on
his behalf but in view of my experience
since I was like to keep away from Clark.
His way to leave is only that Mr. R.
has a bad cold and is not likely to
come down here before Monday. Inclosed

Received from Mr. J. W. Sawyer
summons in the Clark
matter. It was shown
through the door post
as I guess it. The
fellow tried to get into
my room last night.
at bottom, about
10-11-12
in my friend's
was successful to go.
never

12

D.S.
Please write

The Waldorf-Astoria
New York.

March 27, 1908.

Dear Dr. Schreff,
I expect that the
Condenser frames (6)
will be shipped by
6 - noon. You will
be pleased to find
that I have made an
improvement which
does away with the

seemingly perfect — glad to come here but
separated collection to his home regarding the
and learned after the five proper which

The audience of a few which was
pleased. I found I presented the five
papers which is extremely enjoyable. I encourage
long is very plain. I like to stay there but

ought to pass good I would like
with. regret as I like

Alfred calls the five on every
evening in up to date. But he does not
attends with a Cardinal's appearance the annual
ring a me of the changes for celebration.

Hypers. He was in

The Waldorf-Astoria
New York.

March 27, 1906.

Dear Mr. Scherff,

I expect that the
condenser frames (6)
will be shipped by
6 - m. r. r. You will
be pleased to find
that I have made an
improvement which
does away with the

receiving of money —
separate connection to
and terminated after
the conduct of con-
pleted.

I found the Japanese the
paper which is extremely long
though at very thin. I
ought to give good
results.

After calling this
evening in up to date
office with a Cardinal's
ring on one of his
fingers. He was in

my — glad to come back but
action to his home regarding the
after — he gives proper advice
con — of a few months to
experience the firm which was
extremely employs him. I encourage
them to stay there but
good I must
regret as I like
them to be I am sorry
to see that he does not
Cardinals' appreciate the unusual
his chances for advancement
to be

Received this morning
summons in the Clerk
hall. It was thrown
through the door just
as I quit it. The
fellow tried to get into den
my room last night.
at bedtime & shot.

To-morrow I hope to
see my friend F. He
was successful to see. I -
mean

N York
J. S.
Please write

NEW YORK CARL ADDRESS WALL OF NEW YORK
PHILADELPHIA CARL ADDRESS BEL OF CALIFORNIA



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK.
THE BELLEVUE-STRATFORD, PHILADELPHIA

The Waldorf-Astoria,

New York March 24, 1906

Dear Dr. Scherff,

Your letter just received. My last one has evidently not reached you yet. With reference to glass covering, I learn from Hecroft Bros. who did quite a lot of work for my friends Sharp & White at 2 P.M. that glass can be had (same kind) light blue & any color. For $\frac{1}{8}$ " thickness 10¢ per sq. foot. For $\frac{3}{16}$ " 15¢. The cost of the frame is not prohibitive. Order can be filled 30-60 days.

The Japan paper can make that they can make paper much thinner but is hard

[illegible]

The Waldborf-Victoria
New York.

April 6, 1906.

Dear Dr. Schuyt,

Anders Sonmølling

Frederick Me-9

Wanted to know

Wm. Morris

Dr. Bidcl les informé

Letter from

1

Handwritten: 10 sheets

proposed against me. I have an idea
the participants expect that we are doing
it. I shall see to it that the participants are
better

helping as the legal those the people.
and doing and not the field. in the
like the case. To see for the

I am sorry for the people who offer
private law. You are the because of
and are well. The offer

born for his family
The changes of the
know how people
are certainly to be
painted with the
pressure
take them out, for

The Waldorf-Astoria
New York.

April 6, 1906.

Dear Dr. Schuff,

Unless something
should prevent me I

expect to be with
you tomorrow

Dr. Pilch has informed

me by letter that he

is not that he has

obtained a doctor

judgment against the
the four ~~parties~~ ^{parties} ~~enforce~~
best interest

I shall see to it that
L. day as the legal
and finally and my
take the case.

I am sorry for the
frustration. You
will see the whole

from far to finally

The charges of the
have been people

are according to the

I have an idea
enforce that in court and
the parchment process
ourselves and better
than the people
in the field, in the
of the true price the
paper rolls in one apper-
ance for better of
them after
over thorough
furnished with the wax
(wax and pressure process)
take them out, just

The air in both parts
sufficiently warm to dry
the air in both parts
kind of the roll the
paper out as much
between two rollers. To
improve further I would
roll the rollers closer
together the paper dry
ing, help the thickness
to be as you think of
the scheme? I believe
it is practical. Would not
require additional apparatus
except two rollers and a
spring for moving the rollers
W. T. M.

not 8 hundred
 mostly all
 is made

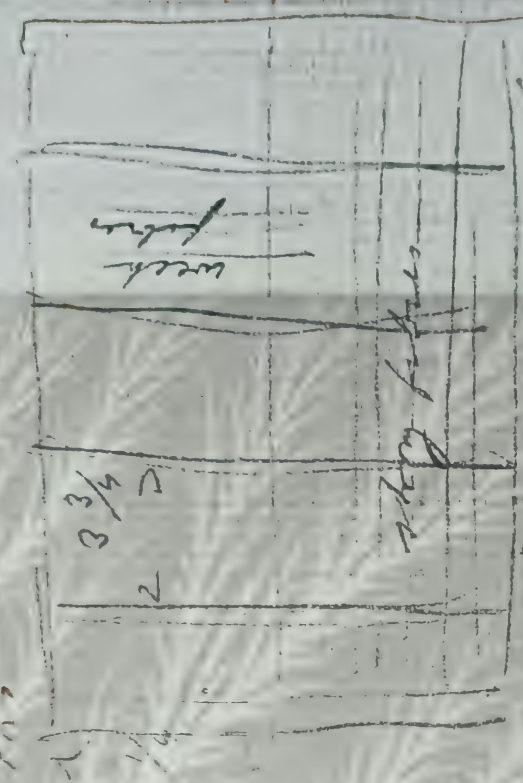
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 give 10 sheets like
 the

from the
 to get him off
 during the year

• Found out something
 very important a report
 to Japan paper is

related to Japan
 their very best
 paper is

not for one customer
 America who
 something perfectly



this was taken from
 directly all right

That paper in later
 especially can much
 information to what

The Waldorf-Astoria
New York.

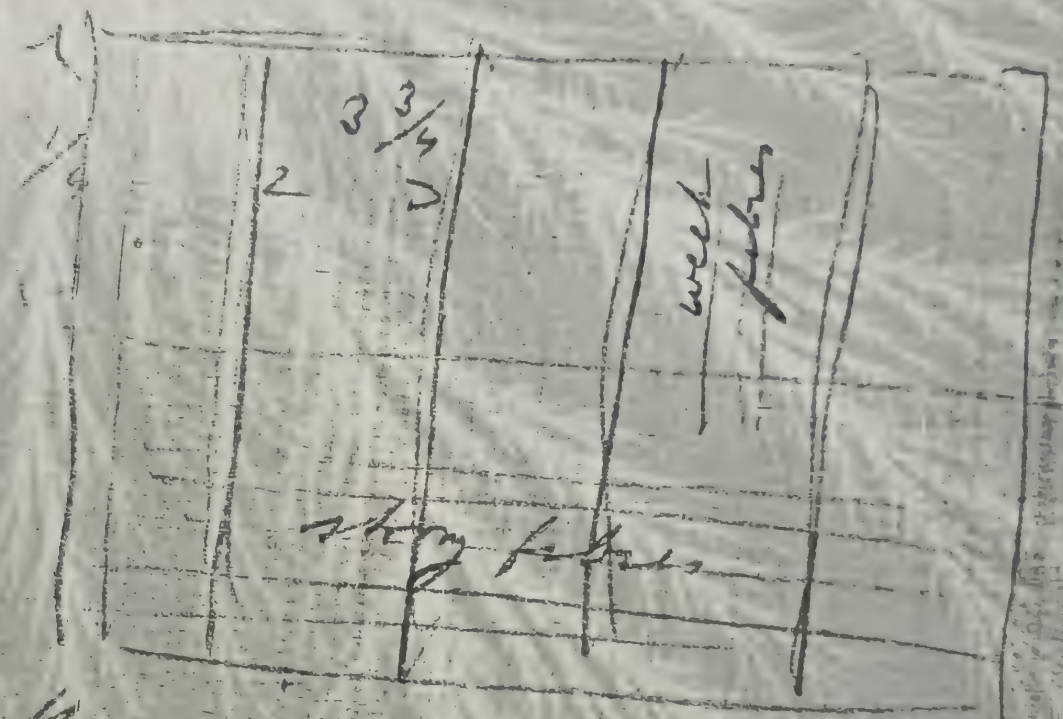
April 16, 1906

Dear Dr. Schuyler,

Have ordered 8 telephones
a receipt of your
disposal for the
same. A bill has
been forwarded (1300 feet)
also 500 T & S tubes,
6 feet (brass).

2 barrels of
Cannon, etc. etc. etc.

Per year \$ 2.75 and
 give 10 sheets like
 this



This will make for a
 direct all right.
 This paper we have
 yesterday was much
 improved by what

we shall get. I
 think it will explain
 a few or more will
 be. Medicine. Should we
 come, agree to form
 Medicine. Of that there
 I agree to come for a
 while of the day. I am
 from the same. I am
 satisfied that we must
 do as the people
 prove before healing
 in order to be sure
 that we get the best
 thing.

only 46 ft for 1000 ft
So the depth of the
water is not too
much

You might expect to
find for digging
here is no water
at all. I am sure
it is 3' deep. For 3 1/2
I hope to get to know
how to dig for
you that water has
been at least on the
line. Sincerely

N. T. ...

The Waldorf-Astoria
New York.

April 16, 1906

Dear Mr. Scherff,

The "Industries" was
an article on the
system of humanism
I have no time to
write perhaps later
from
my application on

which I would
like you to see -
wondering.

Sincerely

N. T. ...

Drop a line when
you can

The Waldorf-Astoria
New York.

April 23, 1906

Dear Mr. Scherff,

To-day being rainy
occurs to me to
suggest to the person
that they prefer
the lower platform for
sitting at the under-
side of the platform.
This part they could
then reserve for
bad days. They

The Waldorf-Astoria
New York.

April 16, 1906

Dear Dr. Schuff,

The "Industries" has

an article on a

system of business

and

I have no time to

perhaps like

excuse me from

my application on

only \$46 ¹⁰ per 1000 feet,
so that my rough estimate
will probably not be
exceeded.

You might suggest the
trench for digging
be made as narrow as
possible and conveniently
about 3' deep. (or 3 1/2')

I hope to get to work
soon by letter from
you that work has
begun at least on the
lower tunnel.

V. R. L. (my)

The Waldorf-Astoria
New York.

April 23, 1906

Dear Mr. Scherff,

To-day being raining
occurs to me to
suggest to the person
who has been they prepa-
re some blankets for
sitting at the under-
side of the platform.
This part they covered
them ~~previous~~ from
bad days. They

Dear Mary

N. York

When I was
born you were
nearly

Dear

N. York

Drop a line
soon

with
love
to
all
side
this
from
your
Aunt

The things I received
I received the best of
some to be in good
condition. I
am very glad to hear
of you.

Please let me know
when you are in town
and I will call on you.
I am very glad to hear
of you.

Yours truly

N. Tebbel

The Waldorf-Astoria
New York.

Apr. 24, 1906

Dear A. Scherff,

I forwarded yesterday
through Mrs. Gardner's

mail, some, reports,
a little book of improve-
ment, construction, drills,

and some strong lectures.
I also enclose a
Please write to these
things ~~at once~~ in
bottom. That will

While newspaper stands
540. I believe we
can make a roll over
allow as suggested before.
I hope you have succeeded
in getting rollers and some
help as I shall be
travelling and some friends
to the plant soon.

Yours truly

N. Tebbel

The Waldorf-Astoria
New York.

April 27, 1906

Dear A. Scherff,

I received word by
Telephone that the
Pearce Co. will ship
all boxes and other
material for condensers,
also rods, the two
large copper tanks and
small boxes for coils
and ~~expansion~~ by

The Waldorf-Astoria
New York.

Apr. 24, 1906

Dear Dr. Scherff,

I forwarded yesterday
through Mrs. Ardmore
some seeds, roots,
and a small ball of sugar
corn, and a small
quantity of honey, and
a small quantity of
Pleasant Mountain
Honey. I am
looking forward to hear
from you.

The things he had
I received from the F. A.
... ..
... ..
... ..

Please
... ..
... ..
... ..
... ..

Respectfully

A. T. ...

The Waldorf-Astoria
New York.

April 27. 1900

Lea H. Scherff

I received word of
Telephone that the
Pearce & will ship
all boxes & other
material for condensation
also rest, the two
large compressors &
small boxes for coils
than equipment by

this newspaper stands

540. I believe we

can take a roll over

allow as suggested before

hope you have succeeded

in getting matters and can

help as I shall be

to take out some paper

to the plant soon

Yours very truly

N. T. S.

I may come out if
 out for a few hours.
 Keep me a line
 or receipt of this
 and in general whenever
 you find it convenient
 as the days here are
 very long.

To whom I expect
 to be able to find
 R. L. Lacey
 N. York

The Waldorf Astoria
 New York.

April 29, 1906

Dear Mr. Schuff,

In thinking over
 the experiments made
 I find that the
 spot not penetrated
 was about in the
 middle portion. The
 wire does not go in
 the point the thickness

Her usual that the
 last one to be get
 new paper for correspondence
 will have picture on top
 made return to address
 T. Laboratory, Long Island City, N.Y.
 The envelope I shall be
 present when he is to
 wait off. This becomes my
 way for letters sent to
 returned and is that case.
 it is better to get them
 done. That will save the
 trouble of a good address. It
 correspondence will be direct
 to laboratory. Sincerely

The Waldorf Astoria
 New York.

May 1, 1906

Dear Mr. Schuff,

I just received your
 letter of yesterday.
 Glad the printers have
 kept a hard man
 my mind suddenly aware
 I get only as this is
 on my mind
 The books are shipped
 and sent by the rail

I may come out of
 only for a few hours.
 keep in a line
 or receipt of them
 and in general whenever
 you find it convenient
 in the city, however
 very long.

To whom I expect
 to be called by friend
 R. Lucy
 N. T. W.

The Waldorf-Astoria
 New York.

April 29, 1906

Dear Mr. Schuff,

In thinking over
 the expressions made
 I find that the
 spot not penetrated
 was about in the
 middle portion, the
 air was not so
 the fact that the

Her request that the
 last one to be set
 our paper of correspondence
 will have picture on top
 made reduced in addition
 to the copy, by 25% of the
 the envelope I shall have
 printed when to the T.
 Waldorf. This is the only
 way for letters sent to
 returned as it has been
 it is better to get them
 there. That will give the
 benefit of a good address, and
 correspondence will be direct
 to Secretary, however

The Waldorf-Astoria
 New York.

May 1, 1906

Dear Mr. Schuff,

I just received your
 letter of yesterday.
 Glad the printers have
 brought a third man
 my own accident and
 get away and that is
 clear to my mind
 The paper is shipped
 and

The Waldorf-Astoria
New York.

April 29, 1906

Dear Dr. Schaff,

In thinking over
the experiments made
I find that the
spot not penetrated
was about in the
middle portion. The
axis was very low
the fact that the

I may come out if
only for a few hours.
Drop me a line
on receipt of this
and in several instances
you find my answers
as the days have been
very long.
To-morrow I expect
to leave my friend

R

Lucy

N York

The Waldorf-Astoria
New York.

May 1. 1906.

Dear Mr. Schuff,

I just received your
letter of yesterday.

Glad the printers have
accepted the third man.

They are evidently anxious

to get away and this is

what I want. My wife

and the baby are shipped

and will be home in a few

N York

Now resolved that the
next time he get
new paper for correspondence
will have printed on top
head of each address
T. Laboratory, Long Island City, N.Y.
The envelope I shall have
printed when he is in
N.Y. The business of
my few letters will be
written and I shall see
it is better to get them
done. That will save the
trouble of a good address, and
correspondence will be direct to
T. Laboratory. Sincerely
Yours

I have come out of
 out for a few hours.
 keep on a low
 or receipt of this
 and informed them.
 in the case of a
 in the case of a
 very long. I suppose
 to be a good
 to be a good
 R
 Henry N York

The Walcott-Metoria
 New York.

April 29, 1906
 Dear Mr. Schuyler,

In thinking over
 the expression of
 I find that the
 spot and penicillates
 was about in the
 middle portion, the
 was about 1/4 of the
 of the whole.

the various that the
 but will be to get
 new paper for correspondence
 will have for them on top
 have returned to address
 T. Schuyler, Long Island City, N.Y.
 the envelope I shall have
 printed return to do it. Called yesterday
 yesterday. The business of
 way for letters. I am
 returned as is that case.
 I will be glad to get them
 done. That will save the
 amount of a good address. I
 manuscript will be desired. The
 Laboratory, Lincoln

The Walcott-Metoria
 New York.

May 1, 1906
 Dear Mr. Schuyler,

I just received your
 letter of yesterday.
 Glad the penicillates have
 kept a good record.
 They were evidently accurate
 I got away with this as
 clear as my mind
 The penicillates are shipped
 and I shall have them
 in the laboratory. I shall have
 the laboratory, Lincoln

The various cases, that there are
 least in the region. Despite of higher water
 the penicillates water being from penicillates
 penicillates cases than better the penicillates
 the on the ends, then the penicillates
 improve to well to certain with the
 the importance of delay in the ice
 cases. The drying
 process. Though very
 thorough, for it is
 paper in good & long
 would be a case, by
 each 1/4 of a case.

probably will be to-day. On the 2 I shall
 be to-morrow. The penicillates (penicillates) to be
 the probably not than to get the for coming the
 of be have water case, to get the for coming the
 the penicillates to be. I shall have the penicillates
 done tomorrow. The penicillates, will be enclosed in
 case, taken a few days here in the case of the
 the penicillates is better. I am of good & en-
 the change at the stage of the penicillates.
 done the is in the right. You do not yet see
 I am quite interested to see the penicillates. I am
 a list of both when I am interested as it was
 I am at the penicillates. I am at the penicillates
 to-day I am sending the penicillates, which is sent
 to the penicillates.

The Waldorf-Astoria
New York.

April 29, 1906

Dear Mr. Scherff,

In thanking over
the express which reached
I find that the
spot not penetrated
was about in the
middle portion. The
was also simply in
the fact that the

The
last

The

first

then

is a pro

the

congru

proven

through

paper

most

such

abstract

in L - m

The

The assistance being, that
last night the report, de-

The passenger would bring
passage carrier. No. 1000

There are the ends, π , π ,
the π will be

Importance 7

copying 1/2 day

brother, King, and

[Faint handwritten notes at the bottom of the page]

Region just a big

~~River~~ ~~the~~ ~~new~~ ~~cave,~~

Feb 21 1862

Probably read ya L-day Concern
to L-day Concern
The end.

one leaves that Beaver are
that require despite of higher water
and would bring front perpendicular
over them better than possible
ends. The the present reasoning is
with to ascertain whether
of delay in the oil
drying oil before I am
very pressing that you
be not a we have the
a big ender (oil) ready
may come, by suddenly when
I believe

you have concern and I should
have something else

I may come out if
only for a few hours.
Keep me a line
on receipt of this
and in several others.

For the first time
as the days have been
very long.

To-morrow I expect
to call on my friend

R

Lucy

V. T. W.

The Waldorf-Astoria
New York.

May 1. 1906.

Dear Mr. Schuff,

I just received your
letter of yesterday.

Glad the pictures have
arrived in third class.

They are splendid indeed.

I get every one of them as
soon as they come on my mail.

The pictures are shipped

and I will be glad to see them.

Probably reach you to-day or
to-morrow.

The endemism (perhaps) is
probably not shown
as he has made all the
the endemism he could.

down thoroughly. Then he
has been a few days but

The fact that it is not
the change at this stage this time
that it is all right. You

I am quite interested to see
a list of both when I am
I am out to-morrow. Perhaps

To-day I am meeting the
members of the collection.

I am sure I shall
 have something definite
 to tell you about the
 matter for covering the
 work. I have been
 thinking it will be essential to
 have had in the early part
 of the year of good and ex-
 tensive distribution of payment.
 You do not yet see
 why I have received the cable.
 I am astonished as it was
 shipped 21. April from
 Perth Amboy, which is very

Henry

N York

Now resolved that the
best way to get
our paper for correspondence
will be to put on a box
marked returned to address
T. Laboratory, Long Island City, N.Y.
The envelope I shall be
pleased to return to Dr. T.
Washington. This becomes my
way for letters - and I
understand and it has been
I will be able to get them
soon. That will give the
benefit of a good address, and
correspondence will be directed to
T. Laboratory. Sincerely
H. W. H.

Theodor M. Victoria
New York.

May 3. 1906.

Dear Dr. Scherff,

I left a note

on your desk with

reference to the two

seconding coils I enc.

enclosed to be tried

as we all be-

lieve. Hope you will

note carefully when

the seconding coils are

changed from pole to

from an induction

coil to take a

few days in order

that the induction of

the transformer may be

into you but at the same

time

clearly to the fact that

of the seconding coils I

brought to see how it

would stand the test.

We would be very glad to

investigate the behavior of

the coils if it does not

be to pots. Sincerely,
Theodor M. Victoria

my improve on the couple of days.
 next. Having liked it I do not know what
 both down because it is the best
 I have ever seen. The cotton has been
 out of it. Then we will have in a few
 state present in them. It is in the
 here. It is a cheap thing in the
 The bottle. It is a cheap thing in the
 and 2 of them. It is a cheap thing in the
 we exposed. I have never seen it before.
 This exposed. I have never seen it before.
 color ordered. It is a cheap thing in the
 about color for tops of the it will be
 lower price for. It will be the
 to get them in.

The Waldorf-Astoria
New York.

May 3. 1906

Dear Dr. Scherff,

I left a note
on your desk with
reference to the two
secondary coils and con-
siderations to be treated
with respect to the
subject. Hope you will
note carefully when
the secondary is broken
through so that it

My improve on the Couple
sect. Very likely if I
both down because the I
Paraffin has flown I
out of it. Then we The
shall prevent on the right
new Cris, He
The brack. No - 8 sleep. This
and 2 of be. centered
be exposed in the Re
this opinion. I have
also ordered per paint money
dark color for tops of in L
lower platform. It will be
to get them in L

from an excellent
man he better
a few days so better
but the absence of
the standard measure
let you bid me tomorrow
I am sure of

clearly a better friend
of the old world
brought to see how it
will stand the test
It would be very good to
insulate the legs of
the arch if it does not
do to look. I am

Taylor

Old

9

reference
several
others
will
further
note
the
thorough

The Walcott-Alstoria
New York

May 3, 1906

Mr. R. Schmitt,

26 miles from

The New York Co. 10 1/2

from (Schmitt) New York

Mr. Schmitt

My dear Mr. Schmitt

I am sorry to hear

that you are

ill and hope

you will soon

be able to go on your trip

414720 19. with for
12 lbs at 12 1/2

50 lbs 50 x 414720

= 1728000 19. with

but if we think in

$6\frac{1}{4} \times 3\frac{3}{4} = 23.4444$

we will get 172800

23144

$12 \times 12 \times 12 \times 1000$

$2 \times 12 = 24$

for which we have

some money left from 500

before that for which we

have 3000 paper for which

company we have for 24 and

money for one of our

Cost of paper about
\$6.00 - have for
reimbursed paper at \$0.25
the letter received
you in some place
had in the book
for day treatment of
having one bottle of
I am sure paper in
by right position. We
may find that we
can not ourselves

of sheets. But we can
 have what we want. The sheets
 the local defects. Lightly and some
 will be excluded. in covered
 L^{ts} of these papers are and have been better
 in checking against the Bessons but
 the three sheets of they say that it is
 A.A. Japanese but the very different to
 will be much more handle it. They have
 everything. In many several boxes and
 paper through paper sealed.
 found in this one. The quality I ordered
 will give us about
 (according to salesman)

What I have heard
 of the U. S. Paper Co.
 they are a very
 inexpensive process
 in as production
 is covered
 through

But I ordered paper
 $6\frac{1}{4} \times 3\frac{3}{4}$ ft.
 I received right
 and $3\frac{1}{2}$ inches $3\frac{3}{4}$

The Waldorf-Astoria
New York.

May 3, 1906

Dear Mr. Schmitt,

I have ordered from

the Union Wire Co 50 lb

pure (perforated) aluminum

They have after careful

thought this has appeared

to me perfect. I propose

to use it for a screen

for the papers but in a hurry

to order the materials I shall

[illegible]

asked me to com
see press the sheets
lightly and soon
in a capsule.
It would have been better
to have Rebecca but
they say that it is
very difficult to
handle. They tried
several times and
failed.

The party I ordered
will give me about
(around 6 salesmen)

Cost of paper about
46 ⁰⁰ hence per
sheet paper \$0.25.

Let the letter reach
you in time please
for in the book
for dry heat and
dry one roll of
I see some paper in
by right position. We
my friend that we
can not ourselves

What I have learned
of the U. S. Paper Co.
they are a very
important process as
far as production
is concerned.
Many

P. S. I noted paper
 $6\frac{1}{4} \times 3\frac{3}{4}$. If
I receive 2 yd of
and $3\frac{13}{16}$ with $3\frac{3}{4}$.

not any more so that
hope the presentation
will be pretty nearly
thorough the work

Important the conditions
that the work is
the one of full sit-
out a full sit-
length of a full sit-
of the box with
of the cash
not so much
iron case
Crown
N. T. C.

The Marshall Astoria
New York.

May 10, 1906

Dear Dr. Schmitt,

I have copied to
you a list of the
but somewhat. There is
it impossible. There
are several of the
then within his
taken asking him
delivered the cash which
according to the
and the results the

place where as I left. I want my the
The situation is a propandea. It is
a heavy undertaking if will not please
all I have about the present work.

to far as it has been referred to give me liberty,
mother by an address in which I was
to have been by M. W. of course

I shall be very pleased to find he could
(That is what we are permanent in charge
for his office said) and edge of the
over the phone, I get the of them
shows as he surprised I get the of them
but some were there, not

The Waldorf-Astoria
New York.

May 10. 1906

Dear Dr. Schell,

I have expected to

have seen you before

but I cannot find

it impossible. I will be

there Saturday.

I am with best

Believe me

delivered the coal which

according to the

must be received the

please ~~write~~ as I left. C

The ~~business~~ business, a
in every ~~interesting~~ interesting. if
all I have about me
so far it that the
million has been refused
by ~~another~~ another
M.

I still be very ple
(That is what our
for his office said
over the phone), I
thinks as he surprised I get
but some wireless. new

as I left. Could they be asking
for a proposition. It is
interesting if it is not plain
about the particular.

The person people agree
to give me has been
instructed Saturday,

of course
very plain but just to enable
me to make the
said personal arrangements

and adjustments. Before
supposed I got one of these
release new machine I can

not very well so that
hope the printer
will be pretty well
through this week

Important The condenser does
not make a
that I edge of
the ~~condenser~~ ~~is~~
out a full six
beats of an inch
otherwise the box will
not go into the case
I am here
Yours
A. T. C.

Am
but
it is
there
there
Palm
deli.
accord
must

In handling the compound
to 270°C we can see
the compound all white
hence the dry powder
is an appearance and
we be necessary. When
the rolls are through
the compound is covered

and we
I suppose to see
of the small compound
for the purpose. Please
with the experiment and
diagram of the
him N York

P.S. to West has milled
see that you could tell him
The Waldorf-Astoria
New York.
then I send
more present May 11, 1906
Dear Dr. Scherff,

Your letter just
received. I have had you
often

change in evening
its boiling point
the compound
point of liquid. The
metal present at

360° C. whereas Peruffa propose to roast
 birds at 370° C. The breast meat
 is different with Quercus - very white
 it boils at 108° C. whereas this difficulty
 we can in some aspects and save great deal
 bread the purpose of (possible) - This best
 here but not - be right
 the experiment - will be
 we and use steam - This should
 at a pressure of 150 lb. be done outside
 - would come out half of bird dry. The
 way to the bird should be put
 of Peruffa - is a upright position
 In view of this

P.S. Dr. Walter has written y—
See that you comply with him
The Waldorf-Astoria
New York.

These orders
more precise
May 11, 1906

Dear Dr. Scherff,

Your letter just

received.

As I have told you

the
the
the

about the bill of exchange

please to inform the selling

point of view. The

method of payment is

enclosed

360° C. whereas Persia
boils at 330° C. It
is different with Russia
it boils at 108° C.
we can in an effort and
build the paper mill
here but it is not
possible. We would
use and use steel
at a price of 150 lb per
ton would come out half
way to the building
of Persia.
In view of this I am

... Perhaps propose to modify
C. H. The bracket notation is
Business & way which will
108°C overcome this difficulty
appears and seem forced out
of trouble. This has
not yet been done
work for rolls in
150 lb paraffin. This should
be done outside
of building. The
rolls should be put
in a upright position

In heating the compound
to 270°C we are sure
to expel all water
hence the dry process
is our objective and
we are proceeding. When
the rolls are thoroughly
dried we could

P.S.

See

How
more

See

See

I propose to use some
of the same compounds as
for the purpose. Please to
note this experiment will
be of great value of the
Linn. & Tech

point

note



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK
THE BELLEVUE-STRATFORD, PHILADELPHIA

The Waldorf-Astoria,

New York May 14 1906

Dear Dr. Schuch,

I used 7 lbs. Explosive in the
first which showed some bones
Long Island. According to the bones
the shoe was very strong in the foot.
Hope my bones will not be subjected
often to such tests.
Have found a simple way of finding
the end with shelling in the case of
gravel. Safe against breaking through. I
expect to bring out a model soon.
So that we can stand in the shallows
shallows and larger of the lake dry. From N. T. Paul

NEW YORK CABLE ADDRESS: "WALDORF-ASTORIA"
 PHILADELPHIA CABLE ADDRESS: "BELLEVUE PHILADELPHIA"



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK
 THE BELLEVUE-STRATFORD, PHILADELPHIA

The Waldorf-Astoria,

New York May 14 1906

Dear Dr. Schell,

I read of the explosion in Bridge-
 which showed some force
 along Island. I am sure the force
 the shot was very strong in shell part.
 Hope my power will not be subjected
 upon such tests.
 Have found a simple way of winding
 the coil with shells so that it will be
 quite safe against breaking through. I
 expect to bring out a model soon.
 But we are sure we shall simply
 shatter and break the whole thing. Yours
 N. T. Allen

Coil, 100 with 2.1 (a)
from a 100 with 2.1
man.

I am sure, says he.
We all the way
Huge that for how long
also to put down before
The old man then
he published at a
There is a possibility that
He also says
has put in the
The place is the
has a response to that. The
has 100 but right. He has
have 100 with 2.2. I
from 100 to last night.

The machine is to be by
he will be in 2.4 by
The Waldorf-Astoria
New York.

May 11, 1906

Dear Dr. Schenck,

I expected to go out
morning Friday but

it seems better to

wait until Saturday

when I shall

be able to take

the new machine

along with me

and work on it

very much

as possible

Yours

W. H. Schenck

well adapted. I hope these Saturday.
The papers are from
of the Court sent as
expected. We don't
know yet whether
the Supreme Court will
grant change of venue.
It will probably be
decided by Saturday.
New trial seen -
first news. Mr. Sherwood
wishes to take up
by motion. awaiting
word on this type of

we before last trip. I
will advance the work
of your new program
the paragraph paper is
the cipher
any other thing
necessary for washing
I am not quite
the size of mine as that
depends on the construction.
over decided by the time

The Waldorf-Astoria
New York.

May 11, 1906

Dear Dr. Schuff,

I expected to go out
this morning Friday but
it seems better to
wait until Saturday
morning when I shall
be able to take
along the new machine
which will look
very nice in the
evening as per usual

themselves adopted. I
bring them together
and one in my hand
or before last trip. I
have a down the wall
of. You will prepare
the paper paper in
the book the paper
any other thing
necessary for reading
I am not quite sure about
the title of work as that
depends on the conditions
will decide by the time
I will

I get them Saturday.

The papers are full
of the Card that as

I expected. We don't

know yet whether

the Empire Court will

grant change of venue.

It will probably be

decided Saturday.

How what seems a

bad good news. Mr. Sherwood

wants to take up

my mother's revelations

and is this type of

Coal, purchased at 1.00
from a Chicago merchant by
name. Merchants capital
and commercial. Says he
has all the money necessary
to get out for him but
cannot do so. Some help
The and judge that should
be provided at any cost. It is
There is a possibility that
the oil might come out
also get an idea of
the place so that he may
have a second lot. He has
been to the oil field. His last
Coal Sunday, with 225. It
has 100 to the oil field.

My dear Mr. Scherff,
 I am sorry to hear that you are
 not well. I hope you will
 get better soon. I am
 very sorry to hear that you are
 not well. I hope you will
 get better soon. I am

Very truly,
 J. P. Scherff

The Waldorf Astoria
 New York.

May 20, 1906.

Dear Mr. Scherff,

I think you will
 find the story of the
 in the cord we are
 in for as I can see
 it can not be in
 the world. Let me
 know what you think
 of this.

Yours truly,
 J. P. Scherff

present at the east of the ditch.
 of the ditch, proper name. The primary for mile.
 the house is very large. The stone is used
 made. The pipe will not light. or
 be checked up somewhat. I hope you
 or show the water. will be able to do
 opening in the house. it is that I may
 handle in the street, both in the street
 the second to the corner I come out.
 the main to the pump. Not near of the
 (200 lbs). Tell him that we
 to do this before. but
 the machine. When can you get of better.
 to come to - summer school. The house.

The Waldorf-Astoria
New York.

May 20, 1906.

Dear Mr. Scherff,

I think you will
find the hotel as good
as the one we are
in for as I can see
it can not be in
the hotel.

Very truly
yours

George P. Scherff

from at the end of the pipe near the pump. The pipe will be checked up somewhere in the valve line. It is opening in the line. The valve is to be closed. The valve will come to the pump. Tell him to do this before the pressure when it comes to a stop close.

... said ...
... near ...
... The primary for ...
... later stand ...
... will say ...
... somewhere ...
... I hope you ...
... will be able to do ...
... it so that I may ...
... before ...
... I come out ...
... No news of ...
... but I ...
... proof of letter - ...
... lead ...

very good. To-morrow
expect to add the
D. cannelier. I can
not see how I can
find the new name in
the cannelier as the
change takes place
just now.

~~Change~~

~~to add~~

to come to a decision about



New York May 28, 1906

Dear Mr. Scherff

This is the first steel received from the Detcon B. Co. The cut seems to be fairly good. At any rate this change of stationery is agreeable to me.

Dr. Sherwood writes that subscriptions for his brand of transformers are coming in all right.

The Peace people will finish

our hundred secondary spools by
to-morrow so that you may expect
them Thursday next.

I have now fully developed a
scheme for winding and simple
hackney wheel. I think I can
not improve. The new winding
will not break down I am
sure and very rapid. My car
has been to do the work.

To-morrow I shall have again
for my friend R. but day after
I will be at home hoping that
you may have the paper for the
Condenser on hand.

Yours
A. T. Fisher

7 had several examinations
over the phone while in
and has promised to
see me as soon as
possible but up to
present nothing has
materialized. It is perfectly
clear to me that if I
am to get capital I
can only get it from
some fellow who has no
less than 100 millions
disposed for the time
being yours
Sincerely yours

N. Tilden

The Waldorf Astoria
New York.

Nov. 20. 1907

My dear Dr. Schaff

I should please find
documents I received.

Tell Mr. Mc Cleen that

I consider him an

ideal corporation lawyer.

As to bringing books

up for dele it is

perhaps to be necessary.

I hope you will see

family are well. Longing for it seems
the last of the year is being almost impossible to
do. Those things seem very easy money it
is. The last. There.

surface lines. I can not see. The last. There.
understand it all has been in by the
American who are so customer and. They
during and relations in are centering interested
other respects can go on but when conditions
seemed to such a degree which I can understand
by this proposition when to except for. The
is really good. I have present. If I had
studied it out in all first a little capital
details in and feel I would be very about
sure that it is very good. I have been
the out of the last. There. The last. There.
how, it has been.

The Waldorf-Astoria
New York.

Nov. 20. 1907

My dear Mr. Scherff

Inclosed please find
documents I received.

Tell Mr. McLean that

I consider him an

ideal corporate lawyer.

As to bringing books

up to date is my

perhaps the necessity.

I hope you will find

family are well. August
the husband is king at
now. There are simply
awful lines. I can not
understand at all how
Americans who are so
daring and reckless in
other respects can get
scared to such a degree.

By ship propulsion when
is really great. I have
studied it out in the
details and feel
sure that it will pull
me out of the hole. I
know I do not mean.

... saying yes because it seems
... being almost impossible to
simply receive any money at
all. The Int. Press.
how service is by best
... so customer and they
... are certainly interested
... but under conditions
degree which I am unable
when to except for them
I have present. If I had
... just a little capital
I would not worry about
... furnishing by plant.
... By friend T.J.A. has

Had several conversations
over the phone with him
and has promised to
see me as soon as
possible but up to
present nothing has
materialized. It is perfectly

clear to me that if I
can get capital I
can only get it from
some fellow who has not
less than 100 millions.

Arguing for the best

Sincerely yours

N. Tilden

The Maldorf-Mosoria
New York.

Dec. 12 1907

Dear Mr. Platt,

Replying to your letter
just received your
copy of course to the point.
I shall send you
the I need you
as soon as I have the address.

Yours
Mr. Allen.

I am sure a little
proportion will help the
cause.

The further seen
with temperature with
propagation scheme even
is looks as though the
of them (see H. H.) will
provide the substance for
a practical experiment

Mr. Crawford will be
back self next week
to I have reason to
believe that he feels better
now and will be at
home with the author
so I called up to H. there
by 6-12 from his summer

in satisfied that
H. H. has the same high
vision of me. to establish
that we started. That
pleases me much. I
was really thinking the

opposite.
H. H. had not and a
letter from a electrician
to-day which is
states that we have
in the volume in by
consideration. It is common
that by fixed lower
period with communication
Sincerely yours

The Waldorf-Astoria
New York.

Dec. 12 1907

Dear L. Schmitt,

Replying to your letter
just received your testimony
is of course to the point.
I shall send you copy
and I trust you read as
we have the same
in the New York.

I have read a G. Allen
Hargrave, in the New York
and in the New York

...d. No further need
to be well represented with
3 propellers - also - and
it looks as though the
of them (the 2. 2.) will
furnish the substance for
a practical experiment

Mr. Crawford will be off
and sail next week
and I have reason to
believe that he feels better
now and will let him
go on with the antibodies

I called up Dr. H. Lee. He
told me that I had from his answer

other seen
D. with
a man
the
() see
me for
riment
he has
weak
to
also better
he
contract
D. seen
summer

I am satisfied that
he. H. has the same high
opinion of me. He entertained
them we started. That
fleets are hard on. I
was really thinking the
opposite.

H. has sent me a
letter from a electrician
to say in which it is
stated that all there is
in the system is by
invention. It is common
that by friends have
summer for real and communication

Sincerely yours



School
 134 Street
 New York

The Harbor-Victoria
 New York.

March 23 1901

Dear Mr. Schmitt,

We signed the day agreement
 relating to the election of a
 committee to delay in the
 matter of the proposed
 business.

The days of the week
 the bill is drawn
 the law is completed
 next week when the
 law begins
 I suppose some in
 the way of

The Waldorf-Astoria
New York.

March 23 1908

Dear Dr. Scheidt,

We signed the day agreement
relating to T. Scheidt & Co. & Co.
but there is a delay in the
H. K. K. proposition. I have
to do the business
common

few days.
I am hard at work and hope
the little instrument and hope
to have it completed sometime
next week when the good work
can begin.
Sincerely
I suppose some is in
the workshop now.

Scherff

124 Street

New York

New York

89



New York, July 1, 1908.

Mr. George Scherff,
C/o Union Sulphur Company,
82 Beaver Street, City.

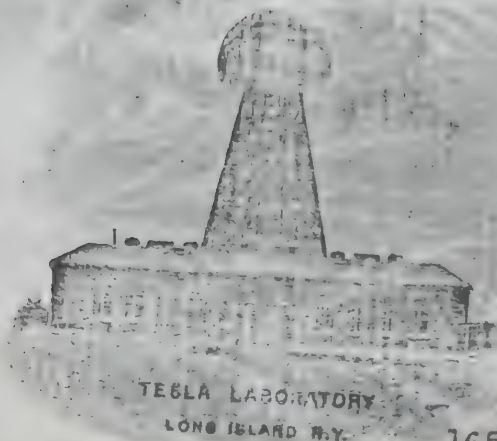
My dear Mr. Scherff:--

Thanks for the trouble you have taken in attending to the company matter.

As to fans or anything else you may need, I shall be glad if you will help yourself as though it were your own. You only need to write Mr. Hawkins and select what you want.

Sincerely yours,

N. Tesla



165 Broadway, New York,
February 19, 1909.

George Scherff, Esq.
Union Sulphur Company,
82 Beaver Street, City.

My dear Mr. Scherff:--

I am sorry to learn from your letter just received, of the illness in your family, but I hope that nothing serious will develop.

Your faith is certainly firm when you say that you expected confidently the payment. I had the idea that your advancement in the company was such as to free you of all troubles.

My progress is slow but sure. We have demonstrated that my water turbine is of very high efficiency, having shown 96% in a recent trial. The steam and gas turbine have both been practically carried out and promise to be revolutionary improvements. We are just completing a blower on the new principle driven by one of my induction motors. This will be a commercial machine. I am now at work on new designs of an automobile, locomotive and lathe, in which these inventions of mine are embodied and which cannot help prove a colossal success. The only trouble is where and how to get the cash, but it cannot last very long before my money will come in a torrent, and then you can call on me for anything you like.

Yours sincerely,

N. Tesla



TESLA LABORATORY
LONG ISLAND N.Y.

165 Broadway, New York,
February 19, 1909.

George Scherff, Esq.
Union Sulphur Company,
82 Beaver Street, City.

My dear Mr. Scherff:--

I am sorry to learn from your letter just received, of the illness in your family, but I hope that nothing serious will develop.

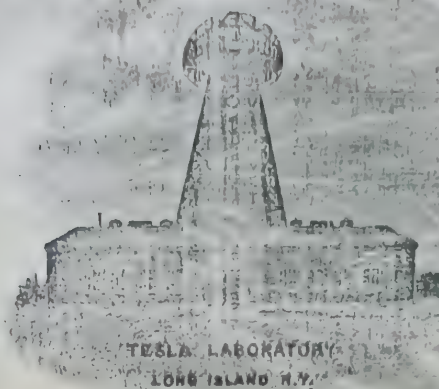
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Yours sincerely,

N. Tesla

George Sch.
Union Sulphur Company,
82 Beaver Street.



165 Broadway, New York,

Nov. 26th, 1909.

Dear Mr. Scherff:

Thanks for your letter. I believe indeed that I have overcome all resistance and that from now on, progress will be steady. In a few days, you may hear of developments which I mentioned to you a few days ago.

I will be much obliged to you if you will advise the Hawkings in regard to the steps necessary towards fixing papers on their behalf. I have the kindest feelings for them and want to have everything right and satisfactory.

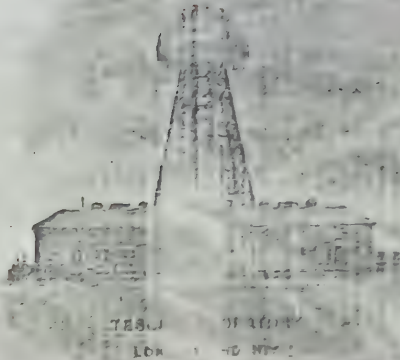
If you have not seen the enclosed, it will interest you.

Yours sincerely,

N. Tesla

George Scherff, Esq.,

82 Beaver St., New York.



10 adway, New York,
Jr 1st, 1910.

My Dear Mr. Scherff: -

I was unable to reply before this to your letter as I had to go out to Bridgeport where we have some important work going on. We have just undertaken to furnish one of my turbo-pumps of 450 horse power for a pumping plant near Buffalo. In the near future, I expect to give myself the pleasure of taking you out and showing you some of my machines in operation.

I do not think that there is any possibility of your ever sustaining a loss whether you had any documentary evidence or not. At least, I understand that claims such as yours would receive preference over any others. I am forwarding you, under enclosure, documents and would be obliged to you if you will let me know the number of shares which have been pledged in each case. I have no record before me at this writing but you probably must have it.

Yours sincerely,

W. T. Cook

John Scherff, Esq.,
Union Sulphur Co.,
82 Beaver St., New York.



TESLA CORPORATION
LON. IS. HD. NY.

10 Broadway, New York,
Jr. 31st, 1910.

My Dear Mr. Scherff: -

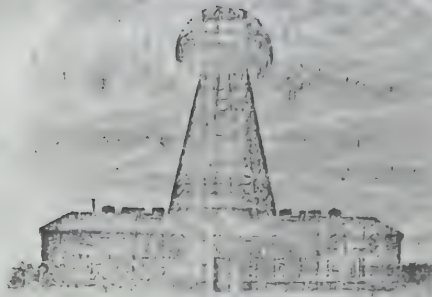
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Yours sincerely,

N. Tesla

John Scherff, Esq.,
Union Sulphur Co.,
82 Beaver St., New York.



TESLA LABORATORY
LONG ISLAND N.Y.

165 Broadway, New York,
April 1st, 1910.

My Dear Mr. Scherff;

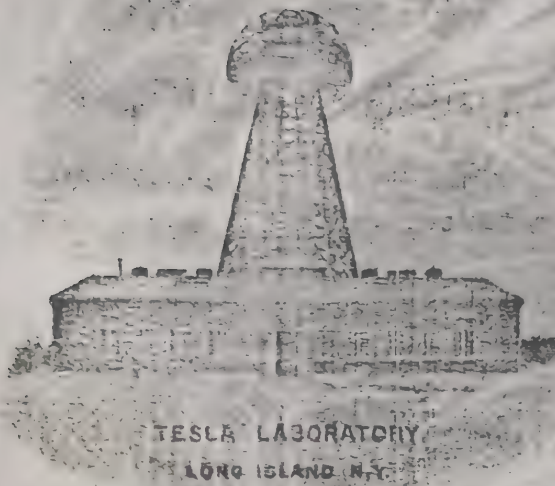
I have just returned from Bridgeport, where I tested my little turbine in the presence of several experts. The machine, to which I have referred in my previous correspondence, developed 93 horse power, which was considered a wonderful performance.

While I am satisfied that the evil spirit will not long bother you, I am afraid that on April 1st, he will have his way.

Yours very sincerely,

N. Tesla

George Scherff, Esq.,
Union Sulphur Co.,
83 Beaver St., New York.



165 Broadway, New York,
April 1st, 1910.

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Yours very sincerely,

N. Tesla

George Scherff, Esq.,
Union Sulphur Co.,
83 Beaver St., New York.



165 Broadway, New York,
June 6th, 1910.

My Dear Mr. Scherff;

The Journal of Commerce has been pressing me for a personal sketch which they want to publish. I have reluctantly promised to furnish it and would like you to help me out. I think that something like the one you wrote for "WHO'S WHO" a trifle enlarged to meet their requirements for space would do. I would be much obliged to you if you would do it at an early date.

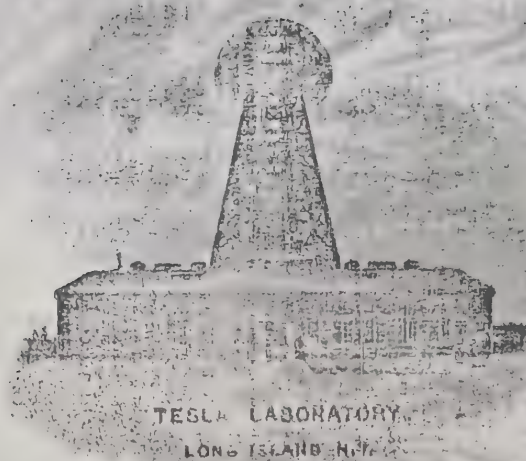
Since our last correspondence I have heard nothing from you and anticipate that Mr. Snider has not yet returned.

It will interest you to know that we have managed to put together the turbo-pump on Saturday but it is not yet in definite shape. However, it will be in running condition before the end of this week and I trust that my expectations will be realized.

Sincerely yours,

N. Tesla

George Scherff, Esq.,
Union Sulphur Co.,
82 Beaver St., New York.



165 Broadway, New York,
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Sincerely yours,

N. Tesla

George Scherff, Esq.,
Union Sulphur Co.,
82 Beaver St., New York.

10 Broadway, New York,
April 22, 1910.

My Dear Mr. Scherff:-

I have duly received your letter of April 6th including a copy of proposed agreement with Mr. Lowenstein which bears evidence of your thoughtfulness and thorough knowledge of the conditions. On the whole, I think though that an agreement on these lines will not permit us to favor him without hurting in some way the other interests of the Company. In view of this, I shall be obliged to you if you will make an effort to devise some other form of contract which will obviate this difficulty. I shall think of the subject myself although I have little hope of arriving at a good conclusion.

Yours sincerely,

Ch. T. T. T.

George Scherff, Esq.,
Union Sulphur Co.,
83 Beaver St., New York.

16

A1

May, New York,

1910.

My Dear Mr. Scherff:-

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Yours sincerely,

Ch. Tesla

George Scherff, Esq.,
Union Sulphur Co.,
83 Beaver St., New York.

165 Broadway, New York,
June 29th, 1910.

My Dear Mr. Scherff;

You called me up yesterday at an inopportune moment, otherwise I would have set aside other engagements to confer with you.

In order to save you unnecessary trouble, I will supplement reluctantly, of course, a few data to the article which you have written some years ago for the *Harper's* publication. It would only been necessary to change the wording somewhat, leave out some unimportant remarks and bring it up to date.

For reasons which you well appreciate, I would suggest that you mention the Elliott Cresson Gold Medal which was awarded me in recognition of the work presented to the Franklin Institute and National Electric Light Association in 1893, in which wireless transmission was one of the most important chapters. Another very important work which should be mentioned are my discoveries of novel radiations or emanations, which I published in a series of papers in the *Electrician's Review*, New York, from 1896 to 1898 and which long after were identified with radium. As you well remember, I announced all the salient phenomena and gave the theory two or three years before anybody believed in the possibility until Madam Currie announced her discovery in which she virtually repeated what I had published except that she attributed the actions to a new element while I pronounced them as general.

In referring to my participation in Scientific Societies, Institutions and Academies, as honorary or regular member, it would be well to state that I am a life member of the British Association and a member of the Royal Institution, as these are probably the most renowned scientific technical institutions.

#2

George Scherff, Esq.,
June 29th, 1910.

In mentioning degrees, you will, of course, recall that I am an M.A. of Yale, an L.L.D. of Columbia and, among other things, a Doctor of Science of the Polytechnic School of Vienna. This distinction was conferred upon me in acknowledgement of my discoveries of the principles of wireless transmission and power.

The most difficult thing probably will be to bring the article up to date by reference to my activities since that article was published. You will know that several Companies have since been formed for commercial exploitation of various inventions. Among these unquestionably the most important is my discovery of a new mechanical principle which I have embodied in a great variety of machines such as reversible gas and steam turbines, pumps, blowers and air compressors, water turbines, mechanical transformers and transmitters of power, hot air engines, etc. This principle, among other things, enables the production of prime movers which can develop ten horse power for each pound of weight, if not more. By their application to aerial navigation, and propulsion of vessels on water, high speeds are practicable, and the results so far obtained are very promising.

At the proper place, you might also fittingly remark, since it is true, that I have a number of discoveries in the electrical field which have not as yet been announced but which I believe to be more important than any electrical work that I have so far done.

I am very sorry that I am compelled to make such statements on paper but I do so simply because I



#3

George Scherff, Esq.,
June 29th, 1910.

know that it must be told and in my desire to spare
you the trouble of coming here.

I am expecting to make some tests of the
large turbine tomorrow and hope that they will
be satisfactory as much depends on the issue.

Yours very truly,

W. T. ...

George Scherff, Esq.,
Union Sulphur Co.,
82 Beaver St., New York.

165 Broadway, New York,
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#3

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June 29th, 1910.

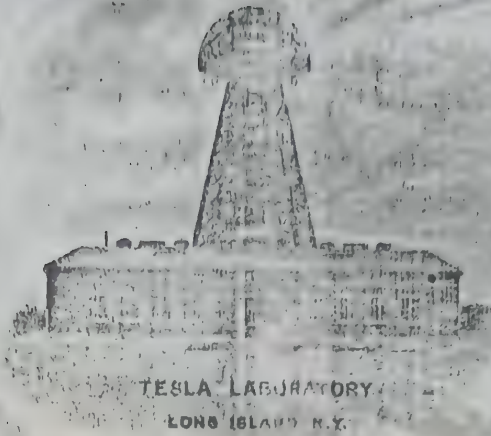
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you the trouble of coming here.

I am expecting to make some tests of the
large turbine tomorrow and hope that they will
be satisfactory as much depends on the issue.

Yours very truly,

Ch. T. T. T.

George Scherff, Esq.,
Union Sulphur Co.,
82 Beaver St., New York.



202 Metropolitan Tower,
September 7th, 1910.

My Dear Mr. Scherff;

If it is possible for you
some day on your way up town, I hope to see
you in my new offices at 202 Metropolitan
Tower, as I have some things to tell you.

Sincerely yours,

N. Tesla

George Scherff, Esq.,
Union Sulphur Co.,
82 Beaver St., New York.



160 Broadway, New York,
June 14th, 1910.

My Dear Mr. Scherff;

We made a test with the turbo-pump Saturday last and developed an impressive little Niagara, 4' wide and 7" deep at less than half the normal speed. The quantity pumped was about 2600 gallons per minute and the height 80'. The pump part is evidently in good order but, I have yet to make some little improvements on the turbine before it is all complete.

Yours sincerely,

N. Tesla

George Scherff, Esq.,
Union Sulphur Co.,
82 Beaver St., New York.



THE WALDORF



THE BELLEVUE



THE ASTORIA

The Waldorf-Astoria

New York June 9 1915

Place N.Y.

to which in my machine just received. It is
with some of my ideas. No author ignores however
the particular advantage when

I pointed two of my contributions that are and
the deposit is spoiled by typographical

I can not comply with your request as yet, but
most in sight. The stock of my company will be very
while I am quite sure. It is possible that
surprise is a little while. As to the
I think you think best.

Yours sincerely

J. Tesla

unstable interest
by formula
letters, almost daily

NEW YORK CABLE ADDRESS "WALDORE NEW YORK"
PHILADELPHIA CABLE ADDRESS "WALDORE PHILADELPHIA"



THE WALDORE



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORE ASTORIA, NEW YORK
THE BELLEVUE-STRATFORD, PHILADELPHIA

The Waldorf-Astoria,

New York, June 9 1915

Madame Place St. G.

I have the article on my table just received. It is
very interesting and contains some of my ideas. The author ignores however
the fact that one of particular advantage when

I proposed two of my contributions that were not
accepted because they were spoiled by typographical
errors.

I can not comply with your request as yet, but
am in sight. The stock of my company will be very
small while I am quite sure. It is possible that I
may be surprised in a little while. As to the
other, you think best.

Yours sincerely

A. Tesla

remarkable interest
in my formulae. I
think about daily.

Our finances were in a little; the expenses being heavy. I really do not know how much of this I shall recover. The balances are very low and as I do not want to draw (for obvious reasons) on our associates here - although they actually make the offer - I would like you to use the bonds and make deposits equally for the credit of both companies. I

hope if you will deposit cash for as I come to New York in a short time the bonds back and subscribe for more.

Please drop me a line by return mail.

Yr's best regards

Very truly yours

Ch. Tash

Ernst Schmitt Esq.
17 Battery Place
New York City



September 25-1911

My dear Mr. Schmitt,

I am a short statement in reply to your letter received a few days ago.

I did not encounter any difficulties of moment, but very important improvements have kept me busy day and night.

As I stated in a dispatch of even date my labor connection

promises to be a colored success. I can be advantageously applied to other
less developed heavy new features of mechanism which I have since long
great comparative value. You will be compelled to build. This road will
please I know that my dynamic belief in greater vigorously as soon as I
seem to prefer results even before return.
attained in any light speed machinery. In view of the pending large business
and I am expecting to get a good deal, as you know, should secure about
pleased covering the method which should be the middle of next month, I think it
be worth a lot of money. The value is considerable to stay here until there
is virtually done away with and the besides there are several other
capacity of the machine has been doubled, projects under consideration which
besides making it cheaper and simpler. may be carried out at least in a
There is every reason to believe that preliminary way. I am very anxious
the outfit will not require attention to have the matter definitely disposed
for a couple of years or more. What if we are positively convinced from
is most important the advantages which I see) on one thousand dollars a month



September 25th 1917

My dear Mr. Scherff,

I am a short statement in reply
to your letter received a few days
ago.

I did not encounter any
difficulties of moment, but very
important improvements have kept me
busy day and night.

As I mailed a dispatch
of even date my latest construction

promises to be a colossal success. I can
have developed many new features of great
commercial value. You will be con-
fused to know that my dynamic telescopic
secures perfect results never before
attained in any high speed machinery,
and I am expecting to get a good third
patent covering the method which should be
worth a lot of money. The oiling
is virtually done away with and the operating
capacity of the machine has been doubled, pro-
viding besides being cheaper and simpler. May
There is every reason to believe that pro-
the outfit will not require attention to
for a couple of years or more. What of a
is most important the advances made that

cess. I can be advantageously applied to other
uses of mechanisms which I have since long
been contemplating to build. This work will
be willingly be pushed vigorously as soon as I
can return.

Very, In view of the pending large business
good which, as you know, should mature about
should the middle of next month, I think it
being advisable to stay here until then.
the Besides, there are several other
unfilled projects under consideration which
may be carried out at least in a
preliminary way. I am very anxious
to have this matter definitely disposed
of as we can positively count (from
what I see) on one thousand machines a month

Our finances worry me a little, the
expenses being heavy. I really do not know
how much of this I shall recover. The
balances are very low and as I do not
want to draw (for obvious reasons) on our
associates here - although they virtually made
the offer - I would like you to use
the bonds and make deposits equally
to the credit of both companies. I

prefer if you would deposit cash. I
will come to New York as
soon as I can and shall take the bonds back and subscribe
for more.

Please drop me a line by
return mail.

With best regards

Sincerely yours

Ernest Scheriff Esq.

Ch. Tash

17 Battery Place

N.Y.

and - perhaps, if it is too much
of a sacrifice to deposit say \$1000 -
for the account of J.C.P. The more
he expects to get it unnecessary
for him to receive the portion of money
available I can through, when they
naturally have to approach me in
the matter & see you very soon with
shopping & see you
in every year

A. George Schuff Esq.
17 Battery Place
Chambers Collection Co. N.Y.



Apr. 7. 1917.

My dear Mr. Schuff,

You will probably understand that
it had been business of the president
to keep me here so long
in accordance with the fact is that
I spend so much money. To stop the money -
the P.N.C. contemplated to stop the money -
failure of their old machine altogether,
at least the manager told me so. Further -
more they are convinced that the party
themselves already sold will have
to be won or else replaced as they
are replace and the railroad people

are receiving their case other objection however if I am successful not to speak
against their use.

Our business arrangements have been
delayed until a demonstration is made
before. From said applicants, on which orders as I am confident of a veritable triumph
of cost less than ten thousand machines are I am cautious not to touch on pressure

hiring. The Company has also put in the

market a S. K. V. R. R. Lightening outfit and matters until then.
has an order for 500 of these but is hesitating. No. 1000 of course a perfectly
safe claim for \$7000.00

I proceed as the machine is a
expensive to build and takes too much
steam. By turbo generator of 5 H. P. would
be twenty one third the size and would save as compensation in the future and
100 lbs. steam per hour. I have been
working hard to persuade them to
adopt mine and think they will
do so. To advance delivery
Shawmut will require Saturday week

As you see all this means big



Apr. 7. 1917.

My dear Mr. Scheff,

You will probably understand that it must have been business of the greatest importance to keep us here so long and spend as much money. The fact is that the P.H.C. contemplates to stop the manufacture of their old machines altogether, at least the manager told me so. Furthermore they are convinced that the forty thousand headlights already sold will have to be worn or later replaced as they are unsafe and the railroad people

are raising their and other objections
against their use.

Our business arrangements have been
delayed until a demonstration is made
before prominent officials on which orders
of not less than ten thousand machines are
hanging. The Company has also put on the
market a 3 K.W. R.R. Lighting outfit and net
has an order for 500 of them but is hesitating
to proceed as the machine is too
expensive to build and takes too much space
steam. My turbo generator of 5 K.W. would
be hardly one third the size and would save as
100 lbs. steam per hour. I have been
working hard ~~to~~ persuading them to
adopt mine and think they will.

As you see all this means big

actions business if I am successful not to speak
of other projects in connection. I am
been arranging for the demonstration before the
officials about middle of next week and
orders as I am confident of a veritable triumph
are I am anxious not to touch on financial
in the matter until then.

Withholding from the funds in the Bank are
We have of course a perfectly
such safe claim for about \$7000⁰⁰ in the
old wireless and also for an additional sum
serve as compensation in the patent suits but
it will take time to collect the said
therefore we must depend on the deals here
for the present. What I would want you
to do is to advance whatever their
Skerritt will require Saturday next

and - perhaps, if it is not too much
of a sacrifice to deposit say \$200
for the account of the T.C.I. This will
be enough to keep it unnecessary
for me to raise the question of money
until I am through, when they will
naturally have to approach me on
the matter.
Hoping to see you very soon with
the best of regards

Mr. George Schaff Esq.
17 Battery Place
Union Sulphur Co N.Y.

Very yours

J. Tesla

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The week I say him to read a paper
again for me pretty soon to be a
for you are like the Sunday after
noon with the report of a long battle
forgot and seen.

See 10 days by.
8 hour 40 ft.
A. G.

January Jones
A. G. Tole

P. S. I was I say only return
I think at last to put in action
in the million come under the I fine
knows that you should be now fully
inform me before proceeding. The claim
are perfectly safe.



Dec. 25, 1917

My dear Mr. Schaff,
about a few lines & supplement by
disposit of yesterday.

Should be in you see how in with my
of letter & P. S. C. which are under the of evening
I have made. Paragraph 11 reads with the insertion
referred to joined to be a column across that
only does as reported in the answer of a perfect
anti-fuge device of ideal simplicity but the in
are for purposes of origin and not devices. In
instance, it adjusts itself instantaneously to
variations of pressure known great. To be applied,
suppose that the temperature on the location

trucks very few, 50 to 250 lbs. in weight for
activity, the more we have the lighter effort
on the ground or performance of the labor. I
also recognize the rotating system always in
the rotation of our furniture warehouse than
every other of fact, or everybody says, it is
wonderful. I also says this down on all my
trucks which are greatly simplify the opera-
tions and increase business.
Now as to how with the P.V. Co. system
shown in volume

payment of \$2000 = an extension of two op-
tions (foreign and domestic lighting) for one
month to date from completion of office
cost of my machine at their factory. There
is a rule within a week. At the expiration
of the term they will have to carry out the
option with carrying and protection of
provided in agreement. There is no doubt that

they will do it but my fight for another
short extension. They are not willing to
start reconstruction and several meetings with
railroad men will be arranged to soon as
the office but not made. There are from
3000 to 3500 machine, moreover in the days
containing labor.

You will recall that in addition to
what for \$2000 = usually furnished to the
T.C. Co. another for \$1000 = in the month
some time. Letter was sent for
each advance made by me in the course
of the work. I have had a long struggle
with them about my personal compensation
and expenses incurred by myself or were
in a behalf of the company and while
no definite conclusion has been reached I
believe they will try to be fair.
As all specifications are very far



Dec. 25, 1917

My dear Mr. Schuff,

Just a few lines to supplement my
dispatch of yesterday.

Under inclosure you will find (in like) copy
of letter to P. H. C. which enumerates the improvements
I have made. Paragraph 11 deals with the invention
referred to, proved to be a colossal success. Not
only does it regulate in the manner of a perfect
centrifugal device of ideal simplicity but that is
more its properties unique and most desirable. For
instance, it adjusts itself instantaneously to
variations of pressure however great. To be explicit,
suppose that the steam pressure on the locomotive

would vary from say, 50 to 200 lbs. no matter how rapidly, this would not have the slightest effect on the speed or performance of the turbine. It also maintains the rotating system always in the condition of least frictional resistance thus saving steam. In fact, as everybody says, it is wonderful. I shall adopt this device on all my turbines which will greatly simplify the operation and insure success.

Now as to business with the P.W.C. matters stand as follows:

6th of June 1911
payment of \$2000⁰⁰ an extension of two options (foreign and domestic lighting) for one month to date from completion of official tests of my machine at their factory. These will be made within a week. At the expiration of the term they will have to carry out three options with cash payments and guarantees as provided in agreement. There is no doubt that

they short start receive the off 3000 counters

check T.C. L.

some cash a of the with the and ex as on no defi believe As

they will do it but may fight for another
short extension. They are not anxious to
start manufacture and several meetings with
railroad men will be arranged as soon as
the official tests are made. There are from
3000 to 3500 machines involved in the deals
contemplated.

You will recall that in addition to
check for \$2000⁰⁰ recently forwarded to the
T.C. Inc. another for \$1500⁰⁰ was transmitted

some time ago. The latter sum was for
cash advances made by me in the course
of the work. I have had a long wrangle
with them about my personal compensation
and expenses incurred by myself as well
as on behalf of the Company and while
no definite conclusion has been reached I
believe they will try to be fair.

All executives are away for

the week I may have to call on you
again but am pretty sure to be in
New York not later than Sunday after
rest with the report of a long battle
fought and won.

Sincerely yours,

Geo. Scheiff Esq.
8 West 40 St.
N. Y.

N. T. Tash

P. S. In view of my early return
I think it best to postpone action
in the wireless cases until then. I find
however that you should be more fully
informed before proceeding. The claims
are perfectly safe.

My dear

dispute

of letter

I have a

referred

only do

centrifuge

are for

instance

variation

suppose

definitely to say how necessary it
shall be free. It looks as though
another week should see me through.

Yours sincerely

A. Tash

Geo. Schuyler Esq.
Tasler Co Inc.
P. O. Box 40 St. N.Y.

P. S.

Please instruct Jim Bennett that
the line of 2000 as forwarded should
be charged to our exp. account



Feb. 10. 1918.

My dear Mr. Schuyler,

Just a few words in a hurry
to explain to you why I am
sticking here at the sacrifice of
all other interests.

The fact is I have developed
a big proposition. To state
briefly my scheme will save
in coal and service alone about

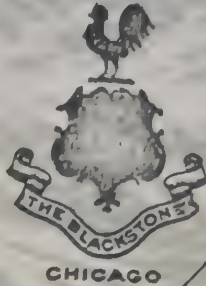
one hundred dollars and, taking
into consideration transport, close
or five hundred dollars per annum.
This makes for seven machines already
installed twenty five million dollars
per year. As you see it is an
important consideration for R.R. at
this moment when economy is the
key note. I think that our business
friends are now convinced of the
soundness of my views and will
act accordingly.

The lighting possibilities in other
fields are now being investigated.
At their request I have dictated

the enclosed to facilitate the work
of their commercial department. I
have no doubt whatever that they
will take advantage of this rare
opportunity. If so they will probably
manufacture five thousand machines a month.

I am naturally very anxious about
the Government work I have undertaken
as I know that I am under great
services just now. But people in Washington
may not understand that I must first
get the money to carry out my
projects.

The work on details of manufacture
keeps me still busy and it is



Feb. 10. 1918.

My dear Mr. Scherff,

Just a few words in a hurry
to explain to you why I am
sticking here at the sacrifice of
all other interests.

The fact is I have developed
a big proposition. To state
briefly my mechanism will save
in coal and service alone about

one hundred dollars and, taking into consideration transport, closely on five hundred dollars per annum. This makes for 5000 machines already installed twenty five million dollars per year. So you see it is an important consideration for R.R. at this moment when economy is the keynote. I think that our business friends are now convinced of the soundness of my views and will act accordingly.

The lighting possibilities in other fields are now being investigated. At their request I have dictated

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have no
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opportunities
manufacture

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of their commercial department. I
have no doubt whatever that they
will take advantage of this rare
opportunity. If so they will probably
manufacture five thousand machines a month.

I am naturally very anxious about
the Government work I have undertaken
as I know that I can under-
stand the services just now. But people in Washington
may not understand that I must first
get the money to carry out my
projects.

The work on details of manufacture
keeps me still busy and it is

difficult to say how soon I
shall be free. It looks as though
another week should see me through.

Geo. Scherff Esq.
Tasle Co Inc.

Yours sincerely

F. W. 40 St. N. Y.

N. Tasle

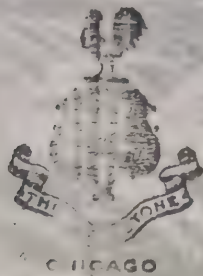
P. S.

Please instruct Jim Herrett that
the cost of \$2000 ⁰⁰ forwarded should
be charged to our expense account

My

to exp
stick
all

The
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briefly
in co



CHICAGO

March 14th 1914

Dear Mr. Scherff,

Inclosure please find two reports
signed as requested.
Have no time to write only to
tell you that we are hard at work
to deliver first machine within ten
days.

See you soon.

With regards

Ed. Scherff Esq.

8 West 40 St.

New York

Sincerely

A. Tesla



March 11. 1914

Dear Mr. Scherff,

Your letter of 9th inst. with
enclosure just received. The letter
has interested me greatly, of course;
also given me some regret that I
have not accomplished more. However,
the present prospects are very bright
and I am confident that your
best statements will be quite different.



March 11. 1918

Dear Mr. Scherff,

Your letter of 9th inst. with
enclosure just received. The letter
has interested me greatly, of course;
also gives me some regret that I
have not accomplished more. However,
the present prospects are very bright
and I am confident that your
next statement will be quite different.

Dear

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suddenly

has inter

also give

have not

the present

and I

best the

NIKOLA TESLA
COMPANY

8 West 40th St.
TEL. 9090 BRYANT
NEW YORK

March 8, 1923

Dear Mr. Scherff,

According to information you furnished some time ago we may assume that the full time (24 h.) operation of eight wells necessitates at present a daily consumption of 4000 barrels of oil which is usually reted at 18000 heat units per pound. Each barrel containing about 42 gallons, the total quantity of oil burned each 24 hours will be, roughly, $4000 \times 42 \times 8$ pounds. Hence the whole heat energy developed in the combustion is -

$$H = 4000 \times 42 \times 8 \times 18000 = 2419200000 \text{ heat units.}$$

Now the water supplied from the heaters or "boilers" is from 4500 to 5000 gallons per minute. Taking the bigger figure (which will show higher efficiency) the entire quantity of water supplied to the eight wells in 24 hours is about $5000 \times 8 \times 60 \times 24 = 57600000$ pounds. Mr. Keever testified that the temperature of delivery is almost invariably 285°.

and as the water enters the "boilers" at about 70°
the increase in its temperature $285 - 70 = 215$; Consequently,
the heat of the fuel imparts to the water a quantity equal to

$$h = 57600000 \times 215 = 12384000000 \text{ heat units.}$$

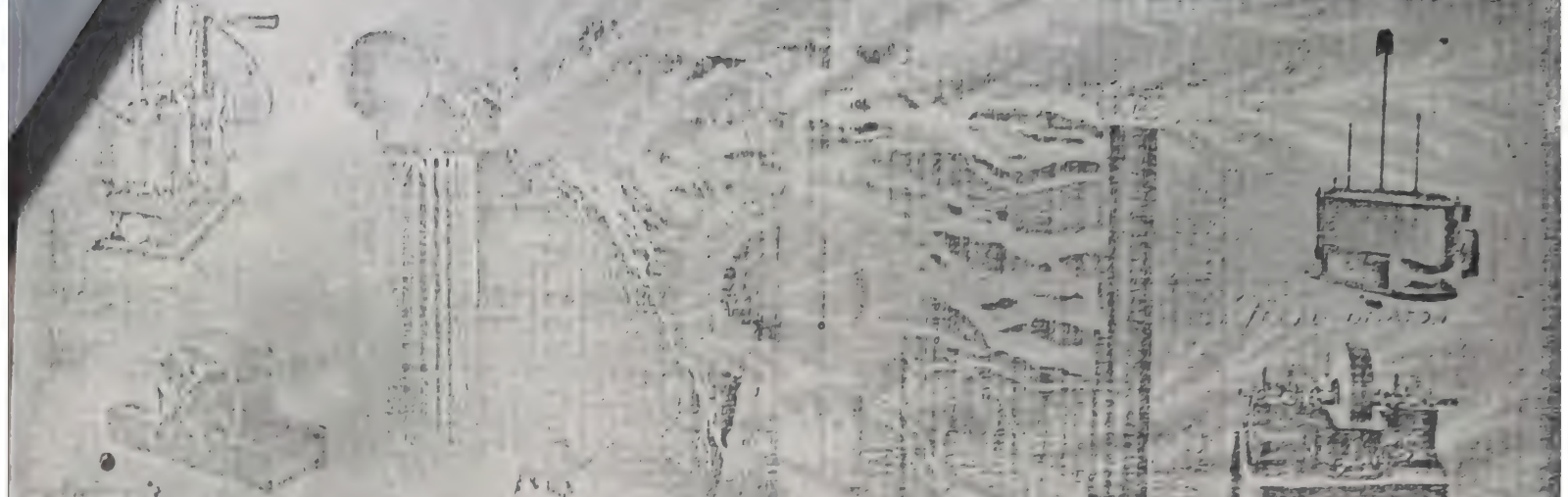
The ratio $\frac{100 \times h}{H} = \frac{100 \times 12384000000}{24192000000} = 51.2$ percent. As the

bigger figure of 5000 gallons per minute was assumed it is
safe to conclude that the heat actually supplied to the eight
wells is less than fifty percent of that developed by the fuel.

Note first that in my process twice as much will be
furnished from the same quantity of oil.

But there are other considerations of equal if not greater
importance and I shall dwell on two of them.

The water is ejected from the wells at a temperature
of $170^{\circ} - 190^{\circ}$, say, 180° on the average and a very large
portion of the heat is thus thrown away. In my process
I can use this hot water over and over so that instead
of heating it from 70° to 285° as at present I shall have
to warm it up from 180° to 285° . In other words, while
each pound of water requires now a heat supply of
 $285 - 70 = 215$ heat units as above pointed out, I
shall need only $285 - 180 = 105$ heat units or less
than one half to produce the same effect with
each pound of water. Theoretically, then, I shall



NIKOLA TESLA COMPANY

8 West 40th St.
TEL. 9090 BRYANT
NEW YORK

require only one quarter of the quantity of oil burned
at present.

But another fact may be, perhaps, of still greater
significance.

Your figures show that eight wells calling for a
fuel consumption of 4000 barrels daily in continuous
operation will yield about 3000 tons of sulphur each
24 hours. Sulphur melts at 239° and the latent heat
of fusion is about 19 heat units. The specific heat
being 0.2 each pound of sulphur requires for lique-
faction $239 \times 0.2 + 19 =$ (nearly) 67 heat units, therefore
all the heat consumed in the fusion during 24 hours is

$$h' = 3000 \times 2200 \times 67 = 442200000 \text{ heat units.}$$

$$\text{The ratio } \frac{100 \times h'}{h} = \frac{100 \times 442200000}{12384000000} = 3.57 \text{ per cent}$$

which means to say that of the heat actually applied

$100 - 3.57 = 96.43$ percent is wasted, or

$100 - \frac{3.57}{2} = 100 - 1.785 = 98.215$ percent of the

heat developed by combustion of the oil. In view
of this enormous waste at the locus of operation
an improvement in the efficiency of ^{transmission of} heat & the
sulphur is of extreme importance. I believe
that, working as I propose, instead of wasting
96.43 percent of the applied heat as at present
this loss will be reduced to possibly 92.86 percent
and that would mean that I may produce with one
eighth of the fuel the same results which are
now obtained. That is to say, the diurnal saving

might be about 3500 barrels. Of course, I
would not vouch for such results but the theory
is sound and they would not surprise me.

You might mention these facts to Mr. Hutton
(not forgetting my caution) when you take up the
subject with him.

Yours very truly

Geo. Scherff, Esq.

Union Sulphur Co

33 Rector St. N.Y.

N. Tesla

NIKOLA TESLA
COMPANY

8 West 40th St.
TEL. 9090 BRYANT
NEW YORK



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Note first that in my process twice as much will be furnished from the same quantity of oil.

But there are other considerations of equal if not greater importance and I shall dwell on two of them.

The water is ejected from the wells at a temperature of $170^{\circ} - 190^{\circ}$, say, 180° on the average and a very large portion of the heat is thus thrown away. In my process I can use this hot water over and over so that instead of heating it from 70° to 285° as at present I shall have to warm it up from 180° to 285° . In other words, while each pound of water requires now a heat supply of $285 - 70 = 215$ heat units as above pointed out, I shall need only $285 - 180 = 105$ heat units or less than one half to produce the same effect with each pound of water. Theoretically, then, I shall

NIKOLA TESLA COMPANY

8 West 40th St.
TEL 9090 BRYANT
NEW YORK

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You might mention these facts to Mr. Weston
(not forgetting my caution) when you take up the
subject with him. Yours very truly

Geo. Scherff, Esq.
Union Sulphur Co
33 Rector St. N.Y.

N. Tesla

The Waldorf-Astoria
New York.

Aug. 16. 1901

Dear Mr. Schaff

Your letter received.

Have called meeting

all attending about

and will be for next

week. I am sorry to hear

of your

drawings with

very kind regards

and hope

you will be

We want a modification

color in the orange

part of the valves

and gaskets. It will

be necessary to have a

person understand what

is the trouble.

I am, Sir, very

Yours

Very truly

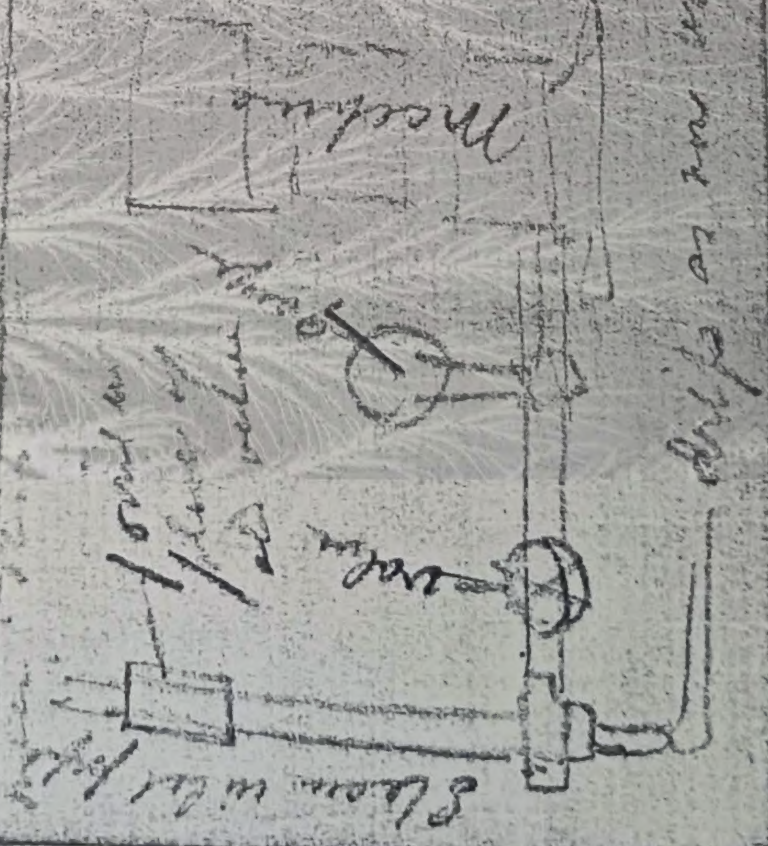
Yours

Very truly

Yours

Very truly

Yours



drips as now used